



Hypodontia and Hyperdontia among Libyan Orthodontic Patients

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ABSTRACT

Background: it is not uncommon for orthodontist to come across patients with dental anomalies such as disturbances in teeth number. Hypodontia is a developmental absence of one or more teeth excluding the third molars, while hyperdontia (supernumerary teeth) is the presence of additional tooth in the normal series.

Objectives: The purpose of this study was to investigate the prevalence of hypodontia and hyperdontia in Libyan patients with different types of malocclusion.

Material and Method: This is retrospective review of the pretreatment dental casts of consecutive patients attending at the department of Orthodontics in the University of Benghazi as well as their panoramic radiographs (OPGs) to look at the disturbances in the tooth number in the study group which was comprised 516 Libyan patients with an age range of 10 years to 34 years at the time of investigation.

Results: A total of eighteen patients had either hypodontia or hyperdontia. The former was detected in 10 (1.76%) cases, 5 (0.88%) lateral incisors, 3 (0.53%) premolars and 2 (0.35%) third molars, while hyperdontia was detected in another 8 cases, 4 (0.70%) mesiodens, 2 (0.35%) premolar and 2 (0.35%) of 3rd molar.

Conclusion: The number of patients with hypodontia and hyperdontia in this sample was apparently different from those previously reported worldwide figures. However, further large scale studies are required to ascertain their true prevalence and impact on Libyan population.

Key words: Hypodontia, supernumerary, Hyperdontia, Libyan, Orthodontics Patients.

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INTRODUCTION

Developmental dental anomalies generally due to complex interactions between genetic, epigenetic and environmental factors during the process of dental development (particularly during the morph-differentiation or histodifferentiation stages) ¹. Dental anomalies are usually congenital malformation that can happen either as isolated finding or as part of a syndrome. Environmental factors could have more important influence on the prevalence of dental anomalies in every population ².

The present investigation have focused on the association between dental anomalies (the

number of teeth) and malocclusion. Dental anomalies in tooth number is usually results in many problems in maxillary and mandibular arch length and occlusion, which may greatly influence orthodontic treatment planning and can complicated orthodontic treatment ^{3,4}. The etiology of these conditions is largely attributed to certain genes in additions to some phenotypic etiological events in prenatal and postnatal periods that may result in anomalies in tooth number ⁵.

Hypodontia is a congenitally missing teeth with no radiographical signs of crown calcification. It is a common development anomaly of the human dentition with the third molars represent the most affected teeth, followed by the mandibular second premolars, the maxillary lateral incisors then the maxillary second premolars while *oligodontia* is the missing of six or more permanent teeth excluding the third molars. *Anodontia* is a complete absence of teeth.

Hypodontia present unfavourable dental appearance, insufficient alveolar bone growth less

chewing ability, in articulated pronunciation, space in the arch, extruded and other problems ⁶.

Hyperdontia or (supernumerary teeth) is a developmental anomaly where there is an additional tooth in the normal series. It may be found in any region of the dental arch associating or not associating with syndromes ². The etiology is by large unknown. The most common hyperdontia anomaly is mesiodens, which occurs in the middle of the maxilla, which can be presented as a single, double or multiple. The third molar and second premolar can also be the site for a hyperdontia which may be unilateral or bilateral with variable morphology ³⁻⁵.

For accurate diagnosis of dental anomalies a careful clinical examination and radiographic evaluation are required. Hence this study involved the records of clinical examination augmented by radiological screening of the patients' records to explore the prevalence of hyperdontia and hypodontia in Libyan orthodontic patients.

MATERIALS AND METHODS

This study is based on the pretreatment dental casts and good quality of OPG that have been taken as part of routine orthodontic treatment planning records are studied for hypodontia or hyperdontia in the faculty of Dentistry of Benghazi University between 2003 and 2018. Only those records satisfied the inclusion criteria were in-

cluded in this study. Only patient aged between 10 and 34 years with all the set permanent teeth in both jaws present were included. Patients with systemic disease or any evidence of tooth loss attributable to dental caries, periodontal, disease or trauma were excluded. Pretreatment dental casts and OPGs were reviewed for the presence of either hypodontia or hyperdontia and number of teeth involved. The radiographs were examined with standardized screen brightness and resolution while the dental casts were visualized by the same examiner for assessment of any disturbance in the number of teeth.

RESULTS

The total number of the patients in this sample is 568 (males 114 and females 454), their age ranged from 10-34 years with a mean age of 22 years (Figure 1). The examined panoramic radiographs and dental casts revealed that 18 (3.16%) patients in the sample had dental anomalies in regard to the number of teeth. Twelve (2.11%) females and 6 (1.05%) males. Hypodontia was detected in 10 (1.76%) cases, 5 (0.88%) lateral incisors, 3 (0.53%) premolars and 2 (0.35%) third molars, whereas hyperdontia was detected in another 8 cases, 4 (0.70%) mesiodens, 2 (0.35%) premolars and 2 (0.35%) third molars as shown in (Table 1).

Table 1: The number of cases with hyperdonia and with hypodontia

Anomaly	Site	Male	Female	Total number	% of the total	% of anomalies
Hypodontia	None	112	446	558	98.24%	10 (1.76%)
	Lateral incisors	1	4	5	0.88%	
	First premolars	1	2	3	0.53%	
	Third molars	0	2	2	0.35%	
Hyperdontia	None	0	0	560	98.60%	8 (1.40%)
	Premolars	1	1	2	0.35%	
	Mesodens	3	1	4	0.70%	
	Third molars	0	2	2	0.35%	
Total		4	4	568	100%	18 (3.16%)

Table 2: Prevalence of hypodontia and hyperdontia in some worldwide studies

Study	Country	Number of patients	Hypodontia n (%)	Hyperdontia n (%)
Montasser and Taha (2012)	Egypt	509	12 (2.4%)	14 (2.8)%
Tantanaporkul (2015),	Thailand	638	87 (13.7%)	16 (2.6%)
Anis et al. (2015)	Malaysia	370	26 (7.03%)	10 (2.7%)
Yassin et al. (2016)	Saudi Arabia	1252	121 (9.7%)	44 (3.5%)
Yoshiyuki et al. (2016)	Japan	9584	364 (3.8%)	6 (0.06%)
Dong et al (2017)	Australia	1050	45 (4.28%)	3 (0.28%)
Pallikaraki et al. (2019)	Greece	1200	77 (6.4%)	12 (1%)
Aldhorae et al. (2019)	Yemen	1676	125 (7.48%)	16 (0.99%)
Gokkaya et al (2020)	Turkey	2348	176 (7.5%)	21 (0.9%)
Present study (2021)	Libya	568	10 (1.76%)	8 (1.40%)

DISCUSSION

Hypodontia is one of the most commonly encountered dental anomalies in many studies and has a negative impact on both the look and function of dentition. It rarely occurs in primary teeth and most commonly affects the permanent second premolars and the upper lateral incisors. It usually occurs as a part of a syndrome that involves other abnormalities as well and usually requires multidisciplinary treatment ²⁻⁴.

In this sample which was composed of 568 subjects, there were 18 (3.16%) patients with either hypodontia or hyperdontia. In this study, hypodontia was the most commonly encountered anomalies in orthodontics. It has been detected in 10 (1.76%) subjects (with the maxillary lateral incisor was the most commonly missing tooth), while supernumerary teeth was found in another 8 (1.40%) subjects (mostly mesiodens). These findings are in consistent with the findings of the previously reported figures worldwide ³⁻⁵.

Hypodontia has much more lower figure in comparison with the findings of Pallikaraki and co-associates (who studied a sample of 1200 Greek orthodontic patients), where oligodontia was the most prevalent dental anomaly in that study (6.4%) and the supernumerary teeth were detected in only (1%) of those patients.

In another study, Tantanaporkul (2015), had evaluated the prevalence and distribution of dental anomalies in pre treatment panoramic radiographs in a Thai sample of 638 orthodontic patients aged 13-30 years, missing teeth were detected in (13.17%) of the patients, while supernumerary teeth was detected in (2.6%) of them ⁵.

Yoshiyuki and co-associates in (2016) had investigated dental anomalies of permanent dentition in 9584 Japanese subjects and found that hypodontia was present in (3.8%) of them and supernumerary teeth was found in (0.06%) of the boys and (0.02%) of the girls ⁶.

A recent study from Yemen carried out by Aldhorae and co-associates in (2019) screened 1676 digital OPGs of dental patients aged between 9-52 years and found that hypodontia was existed in (7.48%) of the patients, while hyperdontia was seen in (0.99%) of the patients.

Montasser and Taha (2012) had studied a sample of cephalometric radiographs of 509 Egyptian orthodontic patients and found that the total prevalence of hypodontia (excluding third molars) and hyperdontia was 2.4% and 2.8%, respectively, with almost similar distributions in females and males ⁷. Gokkaya et al (2020) had studied 2,348 Turkish patients and found that the prevalence of hypodontia and hyperdontia were 7.5% and 0.9% respectively ⁸.

Yassin et al. (2016) had assessed 1252 clinically and radiologically and reported that in one Saudi Arabia hospital, hypodontia has represented about (9.7%) of the cases and it was the most common dental anomaly in Saudi children, followed by hyperdontia (3.5%) ⁹. Dong et al in (2017) found dental agenesis in (4.28%) of 1050 Australian people and (0.28%) had supernumerary teeth ¹⁰.

On comparison with the findings of the abovementioned studies (Table 2), it is clear that the prevalence of hypodontia in the present sam-

ple is much lower than that was previously reported by most of the worldwide studies, whereas the prevalence of hyperdontia is almost comparable with these studies findings. This can only be explained on terms of racial and environmental factors.

Conclusion: the number of patients with hypodontia and hyperdontia in this sample was apparently different from those previously reported worldwide figures. However, further large scale studies are required to ascertain the true prevalence and its impact on Libyan population.

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