Prevalence of supernumerary teeth among a sample of patients attending college of dentistry in Erbil, Iraq (A Retrospective study)

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Background and Objectives: A supernumerary tooth is an additional tooth to the normal series and can be located in almost any region of the dental arch. The objective of the study was to investigate the prevalence of supernumerary teeth and the distribution of the cases according to the demographic data and characteristics among patients attending a College of Dentistry in Erbil, Iraq.

Methods: This descriptive and retrospective study was performed on 1233 patients (658 males 53.4% and 575 females 46.6%) ranging in age from 3 to 14 years old during the period 2017-2018. The characteristics of supernumerary teeth were noted and diagnosed during the clinical and radiographic examination. The demographic variables including age and gender was recorded for each patient. During statistical analysis Fisher's exact test was used. p value of less than .05 was considered statistically significant.

Results: Only eight supernumerary teeth were detected in 1233 patients (0.6 %). 7 patients were males and 1 patient was female with a 1.14:1 male/female ratio (p =0.089). Among supernumeraries: most of them 5 teeth (62.5%) were found in the maxillary anterior, and 7 teeth (87.5%) were conical in morphology. All the supernumerary teeth occurred as single tooth within the oral cavity. Regarding eruption status within the arch, all supernumerary teeth (100%) had erupted. All supernumerary teeth (100%) were extracted.

Conclusion: The identification of this anomaly provides a clue towards the possibility of any complication, pathologies, other related dental anomalies, syndromes and familial association in Erbil, Iraq.

Keywords: Prevalence, Hyperdontia, Supernumerary teeth, Mesiodens.

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Introduction

Prevalence is the proportion of people in a population having a disease. The prevalence is often useful as it reflects the burden of a disease in a certain population.[1] Hyperdontia or supernumerary teeth are terms referred to any excess number of teeth formed as a result of disturbances occurring during odontogenesis.[2,3] Although this problem seems to be caused by environmental or genetic factors, the main etiology is not known.[4] Regarding the etiology of supernumerary teeth, most authors point to phylogenetic factors, specifically hyperactivity within the dental lamina, causing the appearance of addition-al dental buds.[5] Inheritance is also considered to be a major contributor to the development of supernumerary teeth. Supernumerary teeth are seen to run in families over several generations, sometimes skipping one or more generations. Supernumerary teeth are often associated with certain syndromes for example, Gardner's syndrome, cleidocranial dys-plasia and some conditions such as cleft lip and/or palate.[6]

Supernumerary teeth have been found in all areas of the dental arches and may present in both the permanent and primary dentitions, but are five times less frequent in the primary dentition.[7] Thus, the prevalence reported in the literature of hyperdontia ranges between 0.2 - 0.8% in the primary dentition, and in the permanent dentition, between 0.3 - 3.8% of the general population.[8-11] Supernumerary teeth are more frequent among males than among females in a proportion of 2:1.[12-13]

Supernumerary teeth occur singly or in multiples, unilaterally or bilaterally, either in maxilla, mandible, or both.[14] They occur ten times more in maxilla, especially premaxilla, than mandible.[7] Multiple hyperdontia can be associated with several syndromes, however it can be present among patients without any systemic illness. Accordingly, the presence of supernumerary teeth may result in different complications. These complications are described as unerupted teeth or delayed eruption, ectopic eruption, displacement, diastemas, occlusal problems, rotated neighboring teeth, radicular resorption and cyst formation.[4,9] In other cases, supernumerary teeth are asymptomatic and they cannot be diagnosed without routine radiographic examination, if they do not appear in the oral and maxillofacial region. In addition, complications on the neighbouring teeth may help to suspect the presence of supernumerary teeth.[15]

Supernumerary teeth may be classified depending on their location in dental arches and morphology. They can be located in any zone of the maxilla and mandible and can occur in various forms. Supernumerary teeth are mostly located in the anterior medial region (between two maxillary incisors) and these teeth are named mesiodens.[13] This is commonly followed by maxillary lateral incisor, maxillary fourth molar, mandibular third premolar, maxillary premolar, maxillary canine and mandibular fourth molar. In literature, four morphological types of supernumeries have been described: (1) conical; (2) tuberculate; (3) supplemental; (4) odontomatous.[14-15] Moreover, eruption condition, anatomical neighbourhood and the development stage of supernumerary teeth and the severity of alteration or complication determines the treatment plan. Treatment options vary from surgical to orthodontic intervention. An early diagnosis allows an early intervention, a more favourable prognosis, and minimal complications.[11,16]

The objective of the present research was to estimate the prevalence of supernumerary teeth among patients attending department of Peadodontics, Orthodontics and Preventive Dentistry, College of Dentistry, Hawler Medical University, Erbil, Iraq and investigate the characteristics of supernumerary teeth. In addition to this, treatment protocols were made.

Patients and methods

Study design. This retrospective study was conducted on patients who visited the Department of Peadodontics, Orthodontics and Preventive Dentistry, College of Dentistry, Hawler Medical University, Erbil, Iraq in the period between 15th September 2017 to 15th May 2018. Ethical clearance was obtained from the institutional ethical committee for the study. A total of 1233 patients (658 males and 575 females ranging in age from 3 to 14 were examined who consented to participate in the study.

The dental examination was performed by using a mouth mirror and a probe, to determine the presence of the supernumerary teeth. All the cases with the supernumerary teeth were further observed, when there was clinical presence of supernumerary tooth/teeth, panoramic radiograph(s) were taken to rule out multiple unerupted supernumerary teeth and Photographs were also made (Figures 1-2). Nonetheless, exposing all children to X-ray without having any clinical supernumerary teeth and treatment needs is not ethical.[15] Demographic data including age and gender, number of supernumerary teeth, their location, and morphology were recorded for each patient with this condition.

Statistical analysis. Data were analyzed using the Statistical Package for Social Sciences (SPSS, version 22). Chi square test of association was used to compare proportions. Fisher's exact test was used when the expected count of more than 20% of the cells of the table was less than 5. A p value of ≤ 0.05 was considered statistically significant.

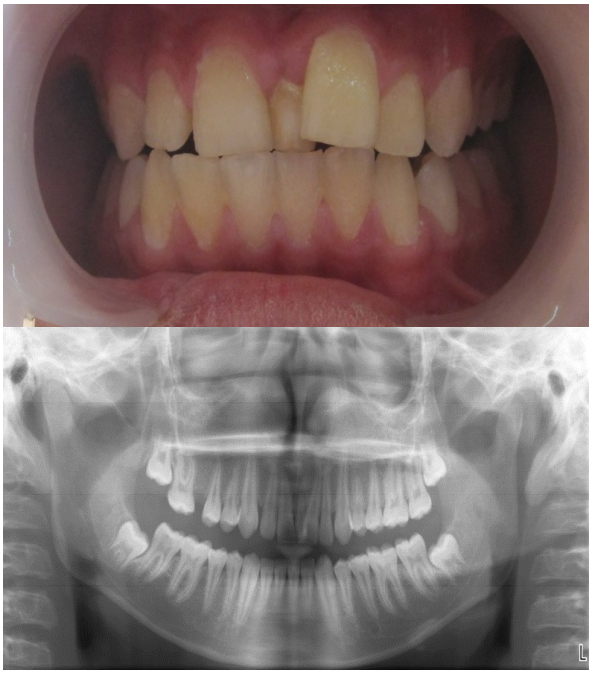

Figure 1: Photographic and radiographic images of a 14 years old male presented with mesiodens type supernumerary tooth in maxillary arch.

Figure 2: Photographic and radiographic images of a 13 years old male presented with tuberculate supernumerary tooth in palatal/lingual to the maxillary arch.

Results

Distribution of the studied sample according to the gender and age: Among these 1233 subjects, 658 were males (53.4%) and 575 were females (46.6%). And the samples were divided into different groups. Group I consisted of cases who were aged less than 5 years which were 2.5%, Group II consisted of cases who were aged between 5–9 years which were 69.4%, and Group III consisted of cases who were aged 10-14 years which were 28.1% (Table 1).

Distribution of the supernumerary teeth according to the gender and age: Among these 1233 subjects, supernumerary teeth were found only in 8 people, with 8 supernumerary teeth accounting for the prevalence of 0.6 %, among which there were 7 males (1.1%) and 1 female (0.2%) with a male: female ratio 1.14:1. Three cases (0.4%) were found to be in the age group of 5-9 years and five cases (1.4 %) were found to be in the age group of 10-14 years old, while in age group of <5 years old, no case was reported (Table 2).

Distribution of the supernumerary teeth according to the jaw: The distribution of the samples according to the jaw showed only in the maxilla 8 (0.6%) as compared to that in the mandible.

Distribution of the supernumerary teeth according to the locations: Three supernumerary teeth (37.5%) were found in the maxilla midline (mesiodens), and 5 teeth (62.5%) were found in the maxillary anterior (Central-lateral-Canine) palatal/lingual to the arch, while in other locations no supernumerary teeth were observed.

Distribution of the supernumerary teeth according to their morphology: Among eight supernumerary teeth which were examined, 87.5% (n=7) were conical, 12.5% (n=1) were tuberculate, while supplementary and odontomatous were not detected.

Distribution of the supernumerary teeth according to their numbers: In our results supernumerary teeth were occurred singly as when there was clinical presence of supernumerary teeth, panoramic radiograph was taken to rule out multiple unerupted supernumerary teeth.

Distribution of the supernumerary teeth according to their eruption status and treatment: Among the 8 supernumerary teeth, all of them were found to erupt into the oral cavity and were extracted because of complication sources (Table 3).

Table 1: Age and gender distribution of the studied sample.

	No.	%
Age		
< 5	31	2.5
5-9	856	69.4
10-14	346	28.1
Gender		
Male	658	53.4
Female	575	46.6
Total	1233	100.0

Table 2: Prevalence of supernumerary teeth by age and gender.

	Supernumerary tooth						
	Absent		Present		Total		
	No.	**%**	**No.**	**%**	**No.**	**%**	**P**
Age							
< 5	31	100	0	0.0	31	100	0.089*
5-9	853	99.6	3	0.4	856	100	
10-14	341	98.6	5	1.4	346	100	
Gender							
Male	651	98.9	7	1.1	658	100	0.074*
Female	574	99.8	1	0.2	575	100	
Total	1225	99.4	8	0.6	1233	100	

Table 3. Characteristics of the supernumerary teeth.

	No.	%
Location*		
Mesiodens	3	37.5
Maxillary anterior	5	62.5
Morphology**		
Conical	7	87.5
Tuberculate	1	12.5
Status***		
Erupted	8	100.0
Treatment******		
Extraction	8	100.0
Number*******		
Single	8	100.0
Total	8	100

*(MaxillaPremolar, MaxillaMolar, MandibleAnterior, MandiblePremolar and MandibleMolar=0)
** (Supplementary, Odontomatous=0)
*** (Impacted=0)
**** (Observation=0)
***** (Multiple=0)

Discussion

It is important for dentists, anthropologists, and other health professionals to know the prevalence of dental anomalies in different communities.[2] Various controversial results have been reported regarding the prevalence of supernumerary teeth in different ethnical backgrounds through different times.[3]

In the present study, the prevalence of supernumerary teeth was 0.6 % which is in agreement with the study that done by Rani et al, who examined 1025 subjects and they found that supernumerary teeth were observed in only 0.8% cases.[7] Demiriz et al, in Turkey performed a study on 6535 non-syndromic children and adolescent ranging in age from 5 to 18 years old and found the prevalence of 2.2%.[16]

The results of this study are comparable to the data found in other studies, while the dissimilarities may be related to the sample selection, method of study, assessment process. In our study only cases who are presented to the college of dentistry clinic with complications related to the supernumerary teeth, while there might be symptomless cases of supernumerary teeth which were missed by our study. One of drawback of our study is the inclusion of those cases presented to our college due to complications related to the supernumerary teeth. Those cases with no complication might be missed in our survey and this inturn leads to underestimation of the exact prevalence of this problem. But the result of this study highlights that are not very rare as it was thought and dental practitioner should take measures to examine patients carefully even at early age. Early diagnosis and appropriate treatment are very important for preventing several complications associated with supernumerary teeth.

Gender wise distribution of our study runs parallel with the findings of many studies in that males are more commonly affected than females.[6,7,14,16] In contrary to our findings, Backman and Wahlin reported more female predilection.[17] The difference in sex ratio was concerned to racial differences or possible sampling differences. This higher prevalence in males may be due to the association of the supernumerary teeth with the autosomal recessive gene, which has a

greater penetration in males, as was suggested by Niswander et al.[14,18]

In our study, 5 cases (1.4%) were found to be in the age group of 10-14 years, this was in accordance with the findings of the studies which were done by other researchers.[14,16,19] This could be because most of the patients become aware of the presence of supernumerary teeth only in the permanent dentition period due to the malocclusion that develops.

All previous studies have consistently stated that supernumerary teeth are much more common in the maxilla,[6,13-15,19,20] supporting the findings of this study. Although the reason is not fully understood, it might be attributed to the very higher prevalence of hyperdontia in premaxilla, the reason of which is not yet clearly known again.

Supernumerary teeth can appear in any region of the jaws, however they most commonly involve the premaxilla which has also been identified as the predominant location by many researchers.[6,15,21] When the results of our research were evaluated, 3 Supernumerary Teeth (37.5%) were found in the maxilla midline (mesiodens), and 5 teeth (62.5%) were found in the maxilla anterior (Central-lateral-Canine) palatal/ lingual to the arch, while in other locations no supernumerary teeth were observed and this result is supported by considering the premaxilla as the predominant location. This high percentage of deviation of the supernumeraries from the centre of the arch leads to complications like crowding and malocclusion. This situation may be explained by obvious complications of premaxilla supernumerary teeth, so these teeth can be diagnosed easily by the parents; this affects the number of referrals.[15]

Supernumerary teeth appear in various shapes, the most common was conical (87.5%). The conical shape was followed by tuberculate (12.5%), Rajab and Hamdan reported that the most common shape was conical (74.8%) in their research, followed by tuberculate (11.9%), supplemental (6.9%) and other configurations (6.4%).[14] In a similar study in Turkey, conical morphology was the most frequent shape with 50.0% ratio.[13] Schmuckli et al, studied the prevalence of supernumerary teeth in Swiss community and found that the conical variety was the most frequent type comprising 70% of cases 22 and our study runs parallel with this finding. In many studies of supernumerary teeth similar results were found.[11,15,19]

Supernumerary teeth may occur singly, or in multiples, in any region of the jaws of the same person.[14] It is well established that supernumerary teeth are more frequently single teeth, while multiple supernumerary teeth appear frequently as two teeth.[13-14,19] However, it is rare to find multiple supernumerary teeth with no attendant diseases or syndromes.[23] According to our results, 100% (n=8) of the supernumerary teeth were found to be single that's to say none of the subjects had more than one supernumerary tooth and our conclusions coincide with the ones given in the literature and our results runs parallel with Demiriz et al in Turkey.[16] It is not known why all the accessory teeth were only unilateral; however, the asymmetric pattern might imply the potential role of environmental etiologies.

While assessing eruption status, we found out that 100% (n=8) of the supernumerary teeth were erupted. This result was unclose to other reported results about erupted supernumerary teeth.[14,19] The reason for this dissimilarity might not be representing the entire population.

Early removal is recommended to facilitate the spontaneous eruption of impacted permanent tooth when the supernumerary tooth is associated with delayed eruption or impaction of the permanent tooth.[11,14] During this research the extraction of supernumerary teeth (100%) was indicated whenever clinical or radiographic complications were observed.

Conclusion

The present study focused on children and young adolescent patients ranging from the age 3 to 14 in order to emphasize the importance of early diagnosis and the appropriate treatment for preventing several complications of supernumerary teeth such as uneruption of adjacent permanent teeth and possible orthodontic problems. The prevalence of hyperdontia in these patients was within the range reported previously

with higher predilection in males than females; the frequency of supernumerary teeth was 0.6% and it is concluded that supernumerary teeth are not a very rare case in mixed and permanent dentition. Moreover, most of the supernumerary teeth were detected by periapical and panoramic radiographs during a routine examination. These results highlight that supernumerary teeth may not evince their presence and clinicians should take measures and examine all patients carefully even at early ages. Mesiodens and maxilla anterior had higher prevalence. However, there was a considerably higher rate in the anterior segment and in the maxilla.

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Conflicts of interest

The authors reported no conflict of interests.

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