Prevalence and Characterıstıcs of Supernumerary Teeth in a Child Population from Central Anatolıa – Turkey

Volkan Arikan[1], Betul Memis Ozgul[2], Firdevs Tulga OZ[2]

[1]Department of Pedodontics, Faculty of Dentistry, Kirikkale University, Kirikkale, Turkey. [2]Department of Pedodontics, Faculty of Dentistry, Ankara University, Besevler, Ankara, Turkey.

Abstract

Aims: This article aimed to characterize the incidence of supernumerary teeth in Turkish children according to sex, location, number and morphology and to explore possible correlations between these variables.

Methods: The study population comprised 7,551 non-syndromic patients aged 3-16 years who applied for routine check-ups at the Ankara University Department of Pediatric Dentistry between January 2009 and January 2010. The population included children in deciduous, mixed and permanent dentition. Both clinical and radiographic examinations were conducted. Demographic variables (age, sex) as well as number, location (maxilla or mandible), position, type and morphology of supernumeraries were recorded for all patients with supernumerary teeth. Supernumerary teeth with odontomes were also noted.

Results: Of the 7,551 patients examined, supernumerary teeth were detected in 74 patients (0.98%). Of these, 48 were male and 26 were female (male-to-female ratio: 1.84:1). A total of 84 supernumerary teeth were detected, 80 (95.2%) of which were permanent teeth and 4 (4.8%) of which were deciduous teeth (n=4). Most supernumerary teeth (n=59, 70.2%) were located in the maxillary arch. The most common supernumerary teeth were mesiodens (36.9%), followed by supernumerary teeth located in the maxillary incisor region (33.3%), the mandibular premolar region (17.9%), the mandibular molar region (5.9%), the mandibular incisor region (4.8%) and the mandibular canine region (1.2%).

Conclusion: The prevalence of supernumerary teeth was found to be 0.98% and mesiodens was the most frequent type.

Key Words: Supernumerary Teeth, Mesiodens, Primary Teeth, Permanent teeth

Introduction

An increase in the number of teeth is among the most common variant in oral and maxillofacial development [1]. Supernumerary teeth are the result of a rare alteration in odontogenesis and are defined as teeth present in excess of the number found in the normal dental formula [2]. Supernumerary teeth have been reported to occur in both primary and permanent dentition; singly, multiply, unilaterally, or bilaterally; and in one or both jaws. Supernumerary teeth are classified based either on their location in the dental arches or on their morphology [3]. They are most often found in the premaxilla, but may occur everywhere in the dental arch [4,5]. Approximately 80% of all supernumerary teeth are found in the anterior medial region of the maxilla [6]. While several theories have been suggested to explain the formation of supernumerary teeth, their etiology remains unclear [3]. The prevalence of supernumerary teeth ranges from 0.5%-3.8% in permanent dentition and from 0.3%-1.9% in primary dentition [7-13]. The sex distribution of supernumerary teeth in primary dentition appears equal, whereas supernumeraries in permanent dentition occur more frequently in boys than girls [14-16].

Aim

There is no study that explores the incidence of supernumerary teeth in a Turkish child population. Therefore, this article aimed to determine the incidence of supernumerary teeth in Turkish children according to sex, location, number and morphology and to explore possible correlations between these variables.

Materials and Methods

For all the children who applied for routine check-ups at the Ankara University Department of Pediatric Dentistry between January 2009 and January 2010, the routine examination diagnosis were carried for these patients from those patients 7,551 non-syndromic patients aged 3-16 years' information were selected and were included in the study. As a routine procedure informed consent from all the patients that are examined were achieved from the parents explaining that the finding from clinical and radiographic (if necessary) findings would be further explored. The population included children in deciduous, mixed and permanent dentition. Mean age of the patients was 9.53. For all patients clinical examinations were performed where necessary the radiographic examinations were carried out as routine examination procedures by VO and BMO. Radiographs taken from patients were routine examination radiographs, if there were a suspicion of supernumerary teeth from the clinical examination radiographs were taken to examine this situation otherwise the finding of supernumerary teeth from routine radiographs were random. However if the patient was suspected to have a supernumerary teeth clinical and radiographic examinations were carried out by all the 3 investigator of the study. Panoramic and or occlusal radiographs have been taken from the children when necessary. Both clinical and radiographic examinations were conducted. Demographic variables (age, sex) as well as number, location (maxilla or mandible), position, type and morphology of supernumeraries were recorded for all patients with supernumerary teeth. Supernumerary teeth with odontomas were also noted. Development of supernumerary teeth was assessed and recorded as either crown formation

Corresponding author: Betul Memis Ozgul, Department of Pedodontics, Faculty of Dentistry, Ankara University, Besevler, Ankara, Turkey, Tel: 905363156948; Fax: 903124260581; e-mail: dtbetulmemis@hotmail.com

only, crown and partial root formation; or complete tooth formation.

Results

Of the 7,551 patients examined, supernumerary teeth were detected in 74 patients (0.98%). Of these, 48 were male and 26 were female (male-to-female ratio: 1.84:1). A total of 84 supernumerary teeth were detected, 80 (95.2%) of which were permanent teeth and 4 (4.8%) of which were deciduous teeth (n=4). The distribution of the supernumerary teeth according to gender and other variables can be seen in *Table 1*. The majority (n=65, 77.4%) of supernumerary teeth were unerupted, and the remainder (n=19, 22.6%) were fully erupted. In most cases (n=52, 62%), only one supernumerary tooth was observed in a patient.

Most supernumerary teeth (n=59, 70.2%) were located in the maxillary arch. The most common supernumerary teeth were mesiodens (36.9%), followed by supernumerary teeth located in the maxillary incisor region (33.3%), the mandibular premolar region (17.9%), the mandibular molar region (5.9%), the mandibular incisor region (4.8%) and the mandibular canine region (1.2%). In terms of side, 30 (35.7%) were located on the left, 29 (34.5%) on the right and 25 (29.8%) on the midline.

In terms of orientation, 60.7% of supernumeraries were vertical, 22.6% were mesioinclined, 8.33% were inverted and 8.33% were distoinclined. In terms of morphology, 45 (53.7%) were supplemental, 27 (32.1%) were conical and 12 (14.2%) were tuberculated, and in terms of development, 41 were (48.8%) crown-only, 26 (30.9%) included partial root formation and 17 (20.2%) were fully formed.

Discussion

Supernumerary is the term used to describe teeth in excess of the normal dental formula [4,17,18]. Supernumerary teeth may be asymptomatic and diagnosed during routine radiographic examinations, or they may cause complications such as impaction; delayed or ectopic eruption of adjacent teeth; crowding or disruption of tooth spacing; and the formation of follicular cysts or other disruptions of the oronasal environment [4,17,19-21]. Supernumerary teeth may be found in connection with a syndrome or in non-syndromic patients [22,23]. While the etiology of supernumerary teeth is unclear, local and heredity factors have been suggested as causes of this anomaly [4,14,24]. Several published studies have reported on the recurrence of supernumerary teeth within the same family, thus supporting the significance of heredity as an etiological factor in supernumerary teeth formation [24,25]. Recent studies have suggested environmental factors as well as a dichotomy of the tooth bud as other possible etiological factors [26-28].

Table 1. *The distribution of supernumerary teeth according to their characteristics and patients' gender.*

		Mesiodens	Maxillary central	Maxillary lateral	Maxillary canine	Maxillary premolar	Maxillary molar	Mandibular central	Mandibular lateral	Mandibular canine	Mandibular premolar	Mandibular molar	Total	%
Gender	Male	20	13	6	-	-	-	1	-	-	7	1	48	64.865
	Female	5	8	1	-	-	-	2	1	1	6	2	26	35.135
Type of teeth	Deciduous	3	-	1	-	-	-	-	-	-	-	-	4	4.762
	Permanent	28	20	7	-	-	-	3	1	1	15	5	80	95.238
Eruption position	Erupted	14	3	2	-	-	-	-	-	-	-	-	19	22.619
	Unerupted	18	17	5	-	-	-	3	1	1	15	5	65	77.381
Number	Single	24	9	6	-	-	-	3	1	1	6	2	52	61.905
	Multiple	8	12	-	-	-	-	-	-	-	9	3	32	38.095
Orientation	Vertical	20	13	4	-	-	-	3	1	-	10	-	51	60.714
	Mesioinclined	4	6	1	-	-	-	-	-	1	3	4	19	22.619
	Distoinclined	2	1	1	-	-	-	-	-	-	2	1	7	8.333
	Inverted	5	1	1	-	-	-	-	-	-	-	-	7	8.333
Morphology	Supplemental	13	13	3	-	-	-	3	1	1	11	-	45	53.571
	Conical	16	6	4	-	-	-	-	-	-	-	1	27	32.143
	Tuberculate	3	1	-	-	-	-	-	-	-	4	4	12	14.286
Formation	Only crown	10	13	1	-	-	-	1	-	-	13	4	42	49.000
	Partial root	11	8	2	-	-	-	1	1	-	2	1	26	30.952
	Entire tooth	11	-	4	-	-	-	1	-	1	-	-	17	20.238

Various studies have reported on the incidence of supernumerary teeth in different populations. Among the Caucasian population, supernumerary teeth have been reported to occur at a rate of from 0.1%-3.8% [5,6,29,30]. The prevalence of supernumerary teeth in the present study (0.98%) falls within this range.

The present study found supernumerary teeth to be more prevalent in male than in female patients, with a ratio of 1.8:1. This finding is in line with those of several previous studies investigating Caucasian populations [2,3,14,31], including an earlier study carried out in Turkey [32]. It has been suggested that the predominance of supernumeraries in males may be due to sex-linked inheritance [22].

In line with other studies [2,5,16,30,31], the present study found a greater number of supernumerary teeth in the maxilla than in the mandible. Most supernumerary teeth were mesiodens, followed by supernumerary teeth located in the maxillary incisor and mandibular premolar areas. These findings are similar to some previous studies [2,32], although a study by Leco Berrocal et al. [22] conducted in Spain reported the maxillary retromolar region to be the second-most-frequent location for supernumerary teeth. The difference in findings may be related to geographical variations.

Supernumerary teeth can be supplemental, conical, tuberculated or mixed [18]. In the present study, supplemental morphology was found to be the most common (53.7%), followed by conical morphology (32.1%). This finding differs from those of several studies that found conical morphology to be the most common, followed by supplemental morphology [2,3,18,31,33].

This study found 22.6% of supernumerary teeth to have erupted. Other authors have reported similar rates of eruption for supernumerary teeth [3,31,34]. Nearly half (48.8%) of the supernumerary teeth in our study showed only crown formation, compared to only 20.2% that were fully formed. This ratio may be explained by the young age range of our study population, which may have allowed for earlier diagnosis of supernumerary teeth.

The findings of our study, which included children in primary, mixed and permanent dentition, indicated that supernumerary teeth are rarely seen in primary teeth (4.8%). Other studies [2,3,31,35] conducted with similar age groups did not distinguish between deciduous and permanent supernumerary teeth, thus precluding comparisons. The prevalence of supernumerary primary teeth in our study is higher when compared to the results of previous studies that report the prevalence of supernumerary teeth in the primary dentition between 0.3%-1.9% [7,13]. However the patient age in the above mentioned studies were higher than this study therefore it is assumed that there is a possibly that some of the patients in the above mentioned studies might had extracted primary supernumerary teeth that the patient story might have not revealed. In our study population we believe that by choosing age 3 as the youngest age we might have detected primary supernumerary teeth more accurately. Also the number of children and the ethnical differences might have played a role in differences from other studies. Our study found that among children with supernumerary teeth, 38% had 2 or more supernumerary teeth. This is somewhat higher than the rates reported by previous studies, which have ranged from 23%-34.18% [2,3,31]. In terms of orientation, in line with previous studies [3,31,33], this study found vertically positioned supernumerary teeth to be the most common and inverted supernumerary teeth to be the least common.

Conclusıon

It is important as a pediatric dentist to take appropriate measures at early ages in order to prevent or reduce orthodontic problems that could occur if the supernumerary teeth are not noticed. The dentist should be aware of the possibility for a supernumerary tooth hence should know the frequency in the population. The prevalence of primary supernumerary teeth found to be higher when compared to other studies. The supplemental form of supernumerary teeth were found to be most common among our study population, our study differs from other studies by that manner.

Conflict of Interest

As far as the authors are aware, we state that there is no conflict of interests.

Contributions of each author

VA and BMO: performed the clinical evaluation of the patients.

FTO: performed the further clinical and radiographical evaluation of the patients with supernumerary teeth.

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