



Supernumerary teeth amongst Saudi children: A retrospective radiographic survey

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General Note

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ABSTRACT

Aim: This study aimed to determine the prevalence of supernumerary teeth in Saudi children. *Materials and Methods:* In this retrospective study consisted of records of Pediatric patients attended the Department of Pediatric Dentistry from past 5 years between December 2013 and December 2018. A total of 1350 children and adolescents (670 girls, 680 boys) were included in the study, and the sample was equally divided between the genders and age includes 5 to 15 years. Pretreatment and longitudinal radiographs for the present investigation (panoramic and periapical radiographs) to check the presence of supernumerary teeth. The data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS 20). The difference in the prevalence of supernumerary teeth between gender was assessed with the chi-square test ($p < 0.05$ significance level). *Results:* Prevalence rate of

the supernumerary tooth was of 71 (5.2%). Mesiodens was the most common supernumerary tooth with prevalence being more in boys (4.6%) than girls (2.5%). Out of 71 supernumerary teeth, 41(57.7%) were in mixed dentition stage, 19(26.7%) patients in the permanent dentition stage and 11(15.6%) in the primary dentition stage. Majority of patients 60 (84.5%) presented with one supernumerary tooth, 8(11.2%) patients reported with two supernumerary teeth and only 3(4.2%) patients reported with three supernumerary teeth. *Conclusions:* This study showed a higher prevalence of supernumeraries in Saudi children than previously reported. The prevalence of supernumerary teeth was more in males than their female counterparts. The present study emphasizes the necessity for early detection and appropriate management of supernumerary teeth.

Keywords: Prevalence, Radiographs, Children, Supernumerary teeth, dental anomalies, Saudi

1. INTRODUCTION

A supernumerary tooth (ST) is an additional tooth in the normal series, erupted or unerupted, and may resemble or is unlike the other teeth of the group to which it belongs (Fardi et al., 2011). Supernumerary teeth can occur in almost all regions of the dental arch (Vishal et al. 2017). However, most are found in the anterior maxilla, either as mesiodens or supernumerary lateral incisors (Roberts et al., 2005). A study revealed the ratio of men to women with supernumeraries to be 2.2:1 or 2:1 (Brook, 1984). Another study found the distribution to be 1.3:1 (Luten, 1967).

The exact aetiology of supernumerary teeth is still obscure, although many theories have been proposed. The dichotomy theory of tooth germs states that the tooth bud splits into two equal or different sized parts, resulting in two teeth of equal size or one normal and one dysmorphic tooth respectively (Koch et al., 1986). Another widespread theory describes the hyperactivity of the lateral dental lamina, as a primary cause, in which the residual epithelium proliferates (Schmuckli et al., 2010; Proff et al., 2006). Heredity was believed to be an important etiological factor and a familial tendency has been noted (Mason et al., 1996). Supernumerary teeth can be classified according to morphology and location: conical, tuberculate (with more than one cusps or tubercle), supplemental (duplicate teeth in the normal tooth series, found at the end of the tooth series) and odontoma (Liu, 1995). The most common supplemental tooth is the permanent maxillary lateral incisor, but supplemental premolars and molars also occur (Garvey et al., 1999).

They can be asymptomatic for years or may cause complications such as impaction, delayed eruption of adjacent teeth, crowding, midline diastema, cystic formation, and root resorption of adjacent teeth (Hattab et al., 1994). Therefore, early diagnosis, evaluation, and appropriate treatment of supernumerary teeth are essential. Several studies have investigated the prevalence of dental anomalies in Saudi Arabia. In Gizan, the most common dental anomaly reported was hypodontia (2.2%), followed by supernumerary (0.50%), among 2,393 children 4 to 12 years old. Rubenstein et al. evaluated the prevalence of supernumerary teeth in orthodontic patients to be 0.64% (Rubenstein et al., 1991). This study aimed to determine the prevalence of supernumerary teeth in the Saudi population. This study will provide baseline data for forensic anthropologists and dental practitioners.

2. MATERIAL AND METHODS

The material for this retrospective study consisted of records of Pediatric patients attended the Department of Pediatric Dentistry from past 5 years between December 2013 and December 2018. Ethical approval for the study was taken from the College Scientific Research Committee (SRC/ETH/2018-19/084), King Khalid University, Abha, Saudi Arabia. A total of 1350 children and adolescents (670 girls, 680 boys) were included in the study, and the sample was equally divided between the genders and age includes 5 to 15 years. Therefore, we used pretreatment and longitudinal radiographs for the present investigation (panoramic and periapical radiographs) to check the presence of supernumerary teeth. The dental history of patients was also checked in terms of extraction of previously erupted or impacted ST.

The patients were non-syndromic and free from any disease. The inclusion data gathered was age, sex, gender, number of supernumerary teeth, type and morphology of supernumerary teeth, localization, and whether it is erupted or impacted and whether it is straight or inverted. Exclusion criteria for this study were patients with developmental anomalies such as cleft lip or palate, Down's syndrome and those who had undergone orthodontic treatment previously. The data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS 20). The difference in the prevalence of supernumerary teeth between gender was assessed with the chi-square test ($p < 0.05$ significance level).

3. RESULTS

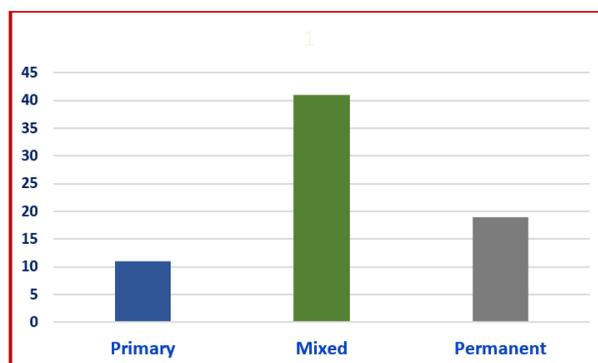
Of these 1350 patients, 680 (50.3%) were males and 670 (49.7%) were females [Table 1]. Out of 1350 patients, the prevalence rate of the supernumerary tooth was of 71 (5.2%). Of the 71 supernumerary teeth, mesiodens was the most common supernumerary tooth with prevalence being more in boys (4.6%) than girls (2.5%). Out of 71 supernumerary teeth, 41(57.7%) were in mixed dentition stage, 19 (26.7%) patients in the permanent dentition stage and 11(15.6%) in the primary dentition stage, a significant finding (Graph 1). Total distribution of supernumerary teeth according to a location in the mandible and maxilla is shown in Graph 2. Majority of patients 60 (84.5%) presented with one supernumerary tooth, 8(11.2%) patients reported with two supernumerary teeth and only 3(4.2%) patients reported with three supernumerary teeth [Table 2]. 54 (76%) patients had erupted supernumerary teeth, 17 (24%) patients had impacted supernumerary, and remaining patients had both erupted and impacted [Graph 3].

Table 1 Gender distribution of the patients

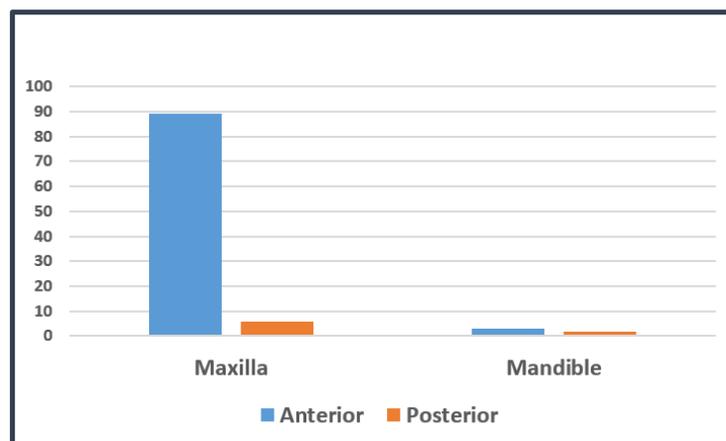
Gender	Number (%)
Male	680 (50.3%)
Female	670 (49.7%)
Total	1350

Table 2 Distribution of supernumerary by number

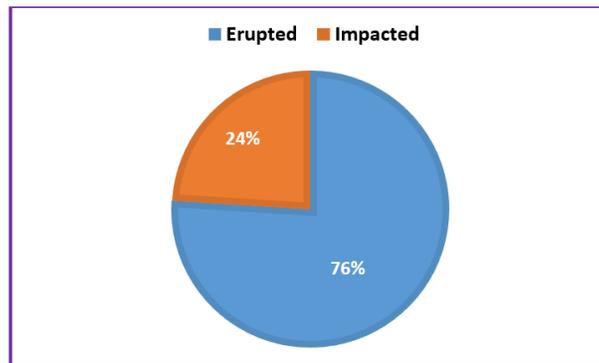
Supernumerary teeth	Number (%)
Single	60 (84.5%)
Double	8 (11.2%)
Multiple	3 (4.2%)



Graph 1 Distribution of supernumerary by type of dentition



Graph 2 Distribution of supernumerary by site



Graph 3 Distribution of supernumerary by Eruption status

4. DISCUSSION

In the present retrospective study, 1350 children from 5 to 15 years of age, i.e., those in a primary, mixed and permanent dentition stages were included in the study. Supernumerary teeth were found in 71 patients, both males and females. Various studies have described the prevalence and gender differences in the occurrence of these teeth in different populations. The occurrence of supernumerary teeth in our population is 5.2%, differs from the value reported by another researcher in Saudi Arabia and is slightly higher than the range of 0.15%-3.8% reported in the literature (Primosch, 1981; Stafne, 1932). A study of 2,393 Saudi Arabian children documented the prevalence of supernumerary tooth to be 0.5% (Salem, 1989). In another study conducted to evaluate the prevalence of various dental anomalies in the western region of Saudi Arabia, they reported a prevalence of 0.3% (Afify and Zawawi, 2012).

The occurrence of supernumerary teeth is higher in males than females in the present study, which is in close agreement with studies conducted by Parolia et al., (2011) and Ata-Ali et al., (2014) in India and Spain, respectively; although it contradicts Giacotti et al., (2002) and Leco et al., (2007), who found no difference between genders in Italy. A low occurrence of multiple supernumerary teeth was observed in our study that is in agreement with studies in Turkey and Iran, representing where >1% of the studied samples would have multiple supernumerary teeth (Rajab and Hamdan, 2002; Asaumi et al., 2004). The presence of multiple supernumerary teeth is usually associated with problems of displacement, rotation, the ectopic eruption of the adjacent teeth, resorption of the adjacent teeth and even the formation of primordial cysts (Hegde and Munshi, 1996). In our study, we found the prevalence of supernumerary teeth in primary teeth (15.6%), mixed dentition (57.7%) and permanent dentition (26.7%). Ersin et al., (2004) described the prevalence with a frequency of about 0.10% to 6% in permanent dentition and 0.02-1.9% in the primary dentition. Shah et al., (2008) reported that prevalence ranges between 0.3% and 0.8% in the primary dentition and 0.1-3.8% in the permanent dentition and that males are affected approximately twice as often as females.

ST most frequently present as a single tooth, while multiple ST appears frequently as two teeth. In agreement with the literature, 84.5% of ST in our study was found to be single teeth, and 11.2% were two teeth (in one person only). Regarding the location of observed ST, 88% were found to be in the maxillary arch. This is similar to the findings of Osuji and Hardie (2002) in Saudi Arabia (79%). This value was higher than the value reported by Salcido- Garcia et al., (2004) in the Mexican population, who found 66% of ST to be in the maxillary arch. However, this value was lower than that (91.3%) reported by De Oliveira Gomes et al., (2008) in Brazilian children. The differences could be due to different sample sizes and racial differences. In terms of location, most supernumerary teeth occur in the maxillary anterior region (Giacotti et al., 2002). The present study was in agreement with these reports, as 88% of the supernumerary teeth were found in the anterior maxilla. Luten et al., (1967) reported the following order of frequency: upper lateral incisors (50%), mesiodens (36%), upper central incisors (11%), followed by bicuspid (3%). The 76% (n=54) eruption rate was similar to the rate reported in other studies (Badra et al., 2005; Liu et al., 2007). Unerupted supernumerary teeth, depending on the morphology, number and distribution can cause various alterations in the eruption and development of the permanent teeth they relate to (Betts and Camilleri, 1999). Clinical complications are not uncommon in patients with supernumerary teeth. Tooth displacement and failure of eruption are the most frequently seen complications.

Supernumerary teeth, impacted, or erupted, may remain in position for years without causing any disturbances and clinical manifestations. However, in some cases, they may cause complications such as impaction of permanent teeth, delayed or ectopic eruption of adjacent teeth, malocclusions such as midline diastema or crowding and formation of cysts with bone destruction and root resorption of adjacent teeth (Hattab et al., 1994). The management of these teeth varies from extraction/endodontic therapy or by maintaining them in the arch and frequent observation.

Most cases of multiple supernumerary teeth have been reported in association with syndromes. Supernumerary teeth are thought to occur ten times more frequently in the upper jaw than in the lower jaw, as shown in reports where 90%–98% of supernumerary teeth occur in the maxilla (Khambete and Kumar, 2012).

The limitations of this study include incomplete or lost patient clinical files that had to be omitted from the study, as well as lack of information on the reasons why the teeth were left untreated. Also, the sample was limited to one dental hospital and may not be representative of the country's multi-ethnic population. Further studies should explore the etiological factors, environmental or genetic, that are common to the studied population.

5. CONCLUSION

This study showed a higher prevalence of supernumeraries than previously reported. Supernumerary teeth are more common among males than females and more frequent in the maxillary teeth and mixed dentition. The results of the present study underline the necessity for early detection and appropriate treatment of these teeth. It should be prudent to adopt a routine radiographic screening of maxillary anterior region at early mixed dentition stage. The presence of an erupted supernumerary with or without the associated symptoms of bodily displacement, midline diastema, torsion, or delayed eruption should spur the clinician to suspect the existence of unerupted supernumeraries. Pediatric dentists must be capable of recognizing intrinsic and extrinsic factors, which can interfere in the developmental stages of teeth, leading to anomalies such as hyperdontia. Early recognition and management of dental anomalies can prevent child suffering from esthetic, orthodontic and periodontal problems.

Financial resources

There are no financial resources.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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