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Research Article

Prevalence of Supernumerary Teeth in Non-Syndromic Northern Malaysian Population

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Abstract: **Objective**: To describe the distribution and characteristics of the supernumerary teeth among non-syndromic Malaysian population. **Material and methods**: A total of 10,200 patients between age of 18 and 35years who visited our department between January of 2015 and May of 2017 were seen. 108 patients with supernumerary teeth were found. Patients were assessed for age, sex, site, position and type of supernumerary teeth. Statistical analysis was carried out using chi square test for gender. **Results**: Of these 108 patients, 30 (28%) were females and 78 (72%) were males. A total of 48 (44%) patients reported with mesiodens, 24 (22%) patients having distomolars and 12 (11%) patients with paramolars and 24 (22%) patients having other types of supernumerary teeth. 78 (72%) patients had supernumerary teeth in the maxillary region and 24 (22%) patients in the mandible while only 6 (6%) patients had supernumerary teeth in both maxillary and mandibular region. **Conclusions:** The prevalence of supernumerary teeth in non-syndromic Malaysian population is 1.05 % with slight male predilection and mesiodens being the commonest. **Clinical Significance**: Knowledge about the supernumerary teeth can enable dentist in early diagnosis, intervention and prevent many possible complications associated with supernumerary teeth**.**

Keywords: mesiodens, supernumerary teeth, syndrome.

INTRODUCTION:

An upsurge in the number of teeth is amongst the utmost common variation in oral and maxillofacial development. Supernumerary teeth (hyperdontia) is an alteration in odontogenesis and can be defined as teeth that surpass the normal dental arrangement of twenty deciduous and thirty-two permanent teeth irrespective of their location and morphology. These teeth may be seen in the oral cavity or may be observed in the routine radiograph by chance. They can be recognized in any part of the dental arch in the deciduous and permanent dentition, can be erupted or impacted, normal in size/shape or deformed, single or multiple, and unilateral or bilateral (Parolia A *et al.*,2011). Previous studies have reported prevalence rates ranging between 0.3% and 0.8% in primary dentition and between 0.1% and 3.8% in permanent dentition (Rajab LD, 2002). It can be concluded from these studies, that these are more common in the permanent dentition with male predominance rather than in the primary dentition with equal sex distribution in various population (Scheiner MA *et al.*, 1997).

Despite the advances in knowledge of odontogenesis, the main reason of occurrence of supernumerary teeth is not certainly explained, several hypothesis have been postulated to explain their presence like atavism theory or dichotomy theory. The furthermost accepted hypothesis is that these teeth develop as a consequence of horizontal proliferation or hyperactivity of the dental lamina as proposed by Shapira and Kuftinec (Rajab LD, 2002). The above mentioned theory can infer that the occurrence of supernumerary teeth is related to genetics, that is why these are more commonly seen in relatives of affected individuals than the general population; however the inheritance pattern does not follow Mendelian principles.

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Other than genetics the environmental aspects must also be considered in the aetiology of supernumerary teeth (Demiriz L *et al.*, 2015). Supernumerary teeth may be associated with several syndromes such as cleidocranial dysplasia, Gardner's syndrome, Ehlers–Danlos syndrome, and Fabry–Anderson syndrome. Multiple supernumerary teeth occur rarely in patients with no syndrome and may appear as double or multiple and as unilateral or bilateral (Nayak G. *et al.,* 2012).

These teeth whether impacted or erupted may remain in the same position for years, without affecting the adjacent soft and hard tissues. However, in few cases, it may lead to complications with clinical manifestations. The various difficulties which may arise due to supernumerary teeth include impaction or delayed eruption of the permanent teeth, malocclusion like midline diastema. The more severe complication which can be seen includes cyst formation involving the impacted tooth with bone destruction and root resorption of adjacent teeth (Anegundi RT *et al.,*2014).

The literature search revealed that there is no study done till date in Malaysian population which explores the prevalence of supernumerary teeth. Thus, this research was aimed to determine the prevalence of supernumerary teeth in non syndromic Malaysian population according to sex, location and type.

MATERIALS AND METHODS

This observational study included the patients who visited the reception clinic of faculty of dentistry, between January of 2015 and January of 2018 and who consented to participate in the study, were examined clinically for supernumerary teeth. Ethical clearance was obtained from the institutional ethical committee for the study. Total 10,200 patients visited the clinic, in that 108 patients aged between 18 and 35 years were diagnosed as having supernumerary teeth and were included for the study. Patients diagnosed with any syndrome were excluded from the study. We collected the demographic data for each patient like age and sex. Following the clinical examination, data of supernumerary teeth was entered under the titles of gender, type of supernumerary teeth (mesiodens ,paramolars, distomolar or others) and position of supernumerary teeth (maxilla, mandible or both). The data obtained were subjected to statistical analysis. Chi-squared test was used to determine differences in distribution of supernumerary teeth when stratified by gender.

Results

Table 1: Distribution of supernumerary teeth according to gender

Gender	n	Patients with Supernumerary teeth	Frequency (%)	P value	Total (%)
Male	6000	78	1.3%	0.004 Significant	108 (1.05%)
Female	4200	30	0.7%		

Of these 108 patients, 30 (28%) were females and 78 (72%) were males. The ratio of male to female is 2.6:1 and p value was less than 0.05 (Table 1). A total of 48 (44%) patients reported with mesiodens, 24 (22%) patients having distomolars and 12 (11%) patients with paramolars and 24 (22%) patients having other types of supernumerary teeth. 78 (72%) patients had supernumerary teeth in the maxillary region and 24 (22%) patients in the mandible while only 6 (6%) patients had supernumerary teeth in both maxillary and mandibular region.

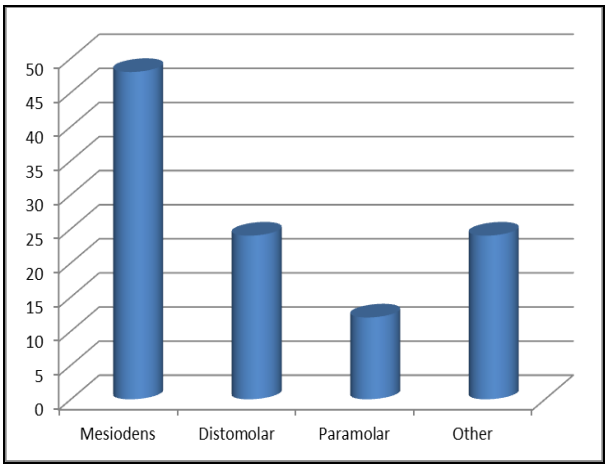
DISCUSSION

Supernumerary teeth are developmental alterations that may manifest in both primary and permanent dentition, may be seen in both maxilla and mandible, and can involve any tooth.[7]They may be associated with a syndrome or can be found in non-syndromic patients also. The present study was to find prevalence of supernumerary teeth in non syndromic population. As from the results it can be depicted that the prevalence of supernumerary teeth in our population was found to be 1.05%. The Table-1 shows that in the total 108 people that had supernumerary teeth consisted of 30 females and 78 males. The ratio of male to female is 2.6:1. The proportion of male getting supernumerary teeth is approximately 2.6 times more than female. The result showed significant difference between the prevalence based on gender with p value less than 0.05. The review of literature shows that the previous studies investigating Caucasian population, including an earlier study carried out in Turkey shows more prevalence in males compared to females. It has been suggested that the predominance of supernumerary in males may be due to sex linked inheritance. Our study revealed a male predominance with a ratio of 2.6:1 which is in consensus with earlier reported studies done by Gábris *et al.*, 2006 - (1.4:1); Brook,1974 - (1.4:1) and Fernández Montenegro *et al.*, 2006- (1.4:1) on different population. However, there are reported studies by Giancotti A *et al.*, 2002 and Berrocal *et al.*, 2007 who did not find any predilection between the two genders.

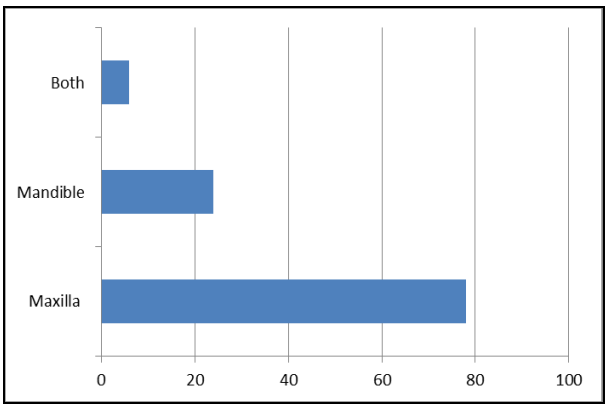
The occurrence of supernumerary is relatively infrequent. The exact etiology of this anomaly is still not completely understood. Numerous theories have been postulated for supernumerary teeth including "phylogenetic theory" or 'atavism' which is a regression to the extinct ancestral tissues or anthropoids. It states that these teeth specifically

paramolars which are teeth found distal to third molar may be atavistic appearance of fourth molar of primitive dentition.[5] The other reason for occurrence of these teeth is the 'dichotomy theory,', where they are considered to be the result of splitting of the tooth bud. The last and most accepted theory is the "hyperactive dental lamina", which states that supernumerary teeth are end result of local, independent conditional hyperactivity of dental lamina. Residues of un-degenerated dental lamina epithelial cells may cause eruption cysts, while over-proliferation or prolonged survival of dental lamina epithelial cells may cause supernumerary tooth formation (Wang XP, *et al.*, 2011). Multiple supernumerary teeth are commonly associated with developmental anomalies such as cleidocranial dysplasia, Gardner's syndrome, trichorhinophalangic syndrome and cleft lip and Palate (Rajab LD, 2002), but they are rarely seen without any syndromes, as in our study.

Figure legends:



Graph 1: Distribution of supernumerary teeth by type



Graph 2: Distribution of supernumerary teeth by site

In this study research, the result showing that 108 cases of supernumerary teeth is found among 10,200 people. In this 108(100%), there are 48 cases are having mesiodens, the percentage is 44%. Other than that, there are 24 cases of distomolars which is 22% among all. There are also 12 cases of having paramolars which is 11%. Then 24 cases (22%) have other types of supernumerary teeth. In this specific historical bar chart (Fig. 1) show that mesiodens is highest percentage among the all. In a while means that mesiodens is more common and more prevalent than other types of supernumerary teeth in Malaysian population. The most commonly found supernumerary tooth has been reported to be mesiodens by numerous researchers which coincide with our findings.

The most prevalent site of supernumerary teeth is maxilla, 78 cases found among 108 incidents of supernumerary teeth. In addition, mandible is 22% which is 24 cases found among 108 cases. Lastly, as seen in Fig. 2 the incidence of supernumerary teeth present at both maxilla and mandible is only 6 cases among 108 cases, which is 6%. The literature review revealed the results are in line with the previous study conducted by Salcido-Garc´ia *et al.*,., 2004 who found 66%of supernumerary teeth in the maxillary arch. It is in accordance with de Oliveira Gomes *et al.*,., 2008 who reported 96.7% and 91.3% of the cases in maxilla, respectively which is very high compared to our result.

The limitations of this study is that it did not include racial variation in the studied sample, as Malaysia has three ethnic groups, which should be studied separately and these results may not be representative of the any specific country's ethnical population. Further studies should explore the etiological factors, environmental or genetic, that are common to the studied population.

CONCLUSION

The prevalence of supernumerary teeth in non syndromic Malaysian patients was found to be 1.05%. Males were affected more commonly than the females. The supernumerary teeth occurred more frequently in the maxilla as compared to the mandible with mesiodens being the most common type.

Clinical Significance

To conclude, even though some supernumerary teeth may not be clinically visible in intraoral examination screening, however the panoramic radiogram is helpful for the diagnosis and intraoral periapical radiograph aids in the treatment planning. The treatment modalities required for these teeth is to be determined by the type, position or any associated complications revealed on clinical and radiographic examination. The prompt diagnosis and proper treatment in each case of supernumerary teeth are important factors for the prevention and confrontation of the potential complication they could cause.

Conflict of interest: Nil

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