

Prevalence Of Vertical Maxillary Excess - An Institution Based Retrospective Study

Research Article

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Abstract

Vertical maxillary excess is a facial deformity with increased anterior total facial height and has a multivariate etiology. Timely diagnosis of the etiology and its treatment can allow normal growth to continue in children. The knowledge of prevalence of vertical maxillary excess provides the clinician a helpful tool to handle such patients in their clinic with clarity and ease. The aim of the study is to evaluate prevalence of maxillary excess in south indian Population. A retrospective study was carried out using case records of 667 patients who reported to the Department of Orthodontics from June 2019 to March 2020. The prevalence of vertical maxillary excess among gender and age group were observed from the digital records and tabulated on a spreadsheet. The collected data was analysed by computer software SPSS version 21 using Chi square test with the level of significance with age and gender. The prevalence of vertical maxillary excess was statically significant with both age (p value-0.001) and gender (p value-0.033). The vertical maxillary excess was most prevalent among the female patients (54.39%) and among the age group of below 30 years (67.84%).

Keywords: Skeletal; Maxilla; Vertical Maxillary Excess.

Introduction

Facial growth has been studied for many years in the field of orthodontics and it has been established that a definitive relationship exists between growth of cranio-facial structures and dental occlusion [1-4].

Vertical maxillary excess is a facial deformity with increased anterior total facial height due to vertical excess of lower facial third. Individuals may present with different degrees of severity in vertical excess. Vertical maxillary excess may exist alone or in combination with horizontal mandibular deficiency with or without an anterior open bite. The facial contour is characterized by a long, tapering face with anterior and posterior maxillary overgrowth, a narrow alar nose and lip in amptence [5].

Other clinical features include increased lower facial height, an-

terior open bite and narrow palate. While excessive vertical facial growth can often be recognized clinically, several cephalometric traits are commonly used to classify the underlying vertical skeletal pattern as normal [normal divergent], short[hypodivergent] or long[hyper divergent]. Both genetic and environmental factor have been associated with the etiology of excessive vertical facial development, although it is likely that more than one subtype exists [6, 7].

Two of the largest studies that investigated the prevalence of skeletal facial types were undertaken in US and involved the evaluation of large orthodontic based sample size [8]. In both studies the prevalence of long face pattern was approximately 22% [8] similar studies which have been carried over in South Indian population [9, 10].

Black individuals had greater prevalence of long face patterns,

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followed by brown white and yellow individuals. Only a small percentage of individuals [$<1\%$] presented serve subtype in all the ethic groups. The prevalence of long face pattern was 14.06% in the population in which 13.39% and 0.68% belonged to moderate and severe subtypes respectively [11].

The prevalence of vertical maxillary excess was approximately 22%. This extreme form of vertical craniofacial growth was also reported to be the second common cause of seeking and receiving orthodontic/surgical treatment [8]. Prevalence of these vertical growth patterns differed significantly according to Angle's classification of malocclusion with the highest proportion occurring in class III sample[35%] followed by class I [32%] and class II division I[30%] and division 2 [18%] groups [12]. The aim of the study is to evaluate the prevalence of dental maxillary excess among men and women and different age groups in the south indian population.

Orthosurgical correction of dentofacial deformities aims to obtain more harmonious and esthetically pleasing facial proportions in addition to normal and stable functional occlusion. The management of vertical maxillary excess includes lefort surgery combined with orthodontist treatment [13-17]. Temporary anchorage devices (TADs) have been shown to be effective in the treatment of VME and/or bimaxillary protrusion [18-21]. Previously our team has a rich experience in working on various research projects across multiple disciplines [22-35]. The aim is to evaluate the vertical maxillary excess in the southindian population.

Materials And Method

Study design

In this retrospective study, data from patients records within the institution were revised and the data of patients who had vertical maxillary excess were collected. At data extraction, all information was anonymized and tabulated onto a spreadsheet. The study was commenced after approval from the Institutional Review Board. Patients who had vertical maxillary excess were reviewed to check the prevalence among gender and age.

Subjects and procedures

Data were collected from June 2019 to March 2020 for 667 pa-

tients who had vertical maxillary excess. The following data were retrieved from the dental records: patient age and gender.

Statistical Analysis

The statistical analysis was done using SPSS software version 21.0 (SPSS Inc., Chicago, IL, USA). The data was verified by the institutional ethical committee and by 2 examiners. All retrospective studies arising from the Data set between 01 June 2019 and 31 march 2020 will be covered by the following ethical approval number. SDC/SIHEC/2020/DIASDATA/0619-0320. The dependent variables were age and gender and independent variables were the patient's willingness, socio economic status. Chi-square test was used to compare the study subject with age and gender.

Result And Discussion

A total of 667 patients with age from 4 years to 64 years were included in the present study. Chi-square test was done between prevalence of vertical maxillary excess with age and gender.

The results of the study is similar to study by Tjan AH et al which states that the prevalence of vertical maxillary excess is 10% among the population aged between 20 and 30 years [36].

The results were similar to a study buty Tjan AH which stated that a study done on 450 individuals with an age range of 20-30 years shows that 7% of men and 14% of women were found to have gummy smiles [22].

The study results were also similar to a study done in Brazilian patients with dentofacial deformities whose status among all the deformed VME was present in 33 patients and the prevalence of skeletal deformities was higher in women [23]. Our institution is passionate about high quality evidence based research and has excelled in various fields [37-47].

The limitation of the study in small sample size, very less clinical factors being included and the variation in the results with change in geographical location. The future scope of the study should include different geographical location, study on larger populations with many clinical factors.

Figure 1. Bar chart depicting association between age of patients with prevalence of vertical maxillary excess. The age of the patients were categorised into three groups namely group 1(<30 years), group 2(31-50 years), group 3(>50 years). X axis represents age of patients and Y axis represents frequency of patients with different age groups. Prevalence of other skeletal malocclusion greater than the VME. This relation was statistically significant, with Pearson's chi square test p value- 0.001.

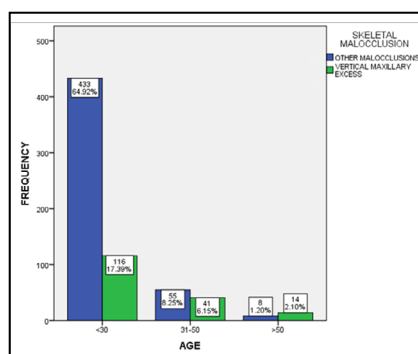


Figure 2. Bar chart depicts the association between gender of patients with prevalence of vertical maxillary excess. X axis represents gender of patients and Y axis represents the frequency of patients with different gender groups. Prevalence of other Skeletal malocclusion greater than VME in both gender. This relation was statistically significant, with Pearson's chi square test p value- 0.033.

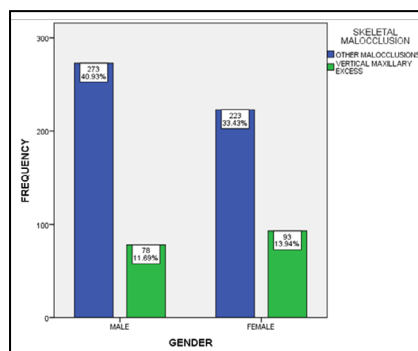


Figure 3. Bar chart depicts the distribution of patients with vertical maxillary excess among different age groups. X axis represents age of patients and Y axis represents the frequency of patients with different age groups. Blue colour represents patients of age group below 30 years, red colour represents patients between 31-50 years and green colour patients above 50 years of age. The study results show that vertical maxillary excess is more prevalent among patients under 30 years.

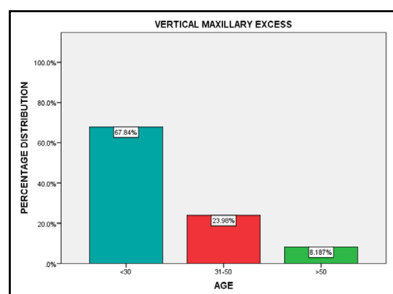
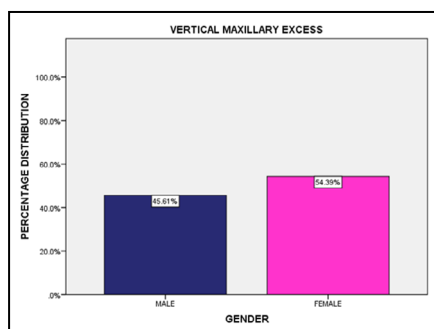


Figure 4. Bar chart depicts the distribution of patients with vertical maxillary excess among gender. X axis represents gender of patients and Y axis represents the frequency of patients with gender. Dark blue colour represents male patients and pink colour represents female patients. The study results show that vertical maxillary excess is more prevalent in the female population.



Conclusion

Within the limitation of the study it can be concluded that prevalence of vertical maxillary excess had significant association with age and gender and it is more prevalent in the female population and in the younger age group of below 30 years. When compared with other skeletal malocclusion VME is lesser in the younger age group. This was due to the change in the pattern of growth in the past 40-50 years that malocclusion is seen more often in the younger generation. The knowledge and awareness about the prevalence of vertical maxillary excess will give an idea on where more focus must be implicated during diagnosis and lead to better treatment planning and more extraoral aesthetic outcome.

Author Contribution

Author 1 (J.Chandrapooja) carried out the retrospective study by collecting data and drafted manuscripts performing the necessary statistical analysis. Author 2 (Dr.Naveen Kumar) aided in the conception of the topic, participated in the study design, statistical analysis and coordinated in developing the manuscript 3 (Dr. Ganesh Jeevanandhan) aided in coordinating and developing the manuscript. All the authors have equally contributed in developing the manuscript.

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