Original Article

INCIDENCE OF DEEP BITE IN DENTAL CLASS 1 PATIENTS WITH VERTICAL MAXILLARY EXCESS SEEKING ORTHODONTIC TREATMENT

[1]M.Ovia, [2]Naveen Kumar, [3]Dr Shweta Nagesh*

[1]Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Science(SIMATS), Saveetha University. Chennai , India

[2]Assistant Professor, Department of Orthodontics Saveetha Dental College and Hospitals Saveetha Institute of Medical and Technical Science(SIMATS) Saveetha University,Chennai , India

[3*]Senior lecturer, Department of Orthodontics Saveetha Dental College and Hospitals Saveetha Institute of Medical and Technical Science(SIMATS) Saveetha University,Chennai , India

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Abstract

Deep bite / Deep overbite is excessive vertical overlapping of mandibular incisors by the maxillary incisors in a centric occlusion. The incisal edges of the lower teeth should contact slightly at or above the cingulum of the upper teeth, which would be approximating 1-3mm overbite. Deep bite is the most common malocclusion in children and adults. The excessive overbite is a complex orthodontic problem that may involve a particular group of teeth or whole dentition or maxilla and mandible. This retrospective cross-sectional study was carried at the UG students clinic and Department of orthodontics. Case records of all the cases were tabulated and after applying the inclusion criteria 19 case records with Class 1 dental occlusion patients with vertical maxillary excess were collected. This data was tabulated and analysed in SPSS and descriptive statistics were performed. The results gave information that 68% of them were females showing high female predilection. Age limit was not mentioned because people of all ages were included in the study. Results showed less male predilection with 32% than females. The study concluded that most of the Female patients were incident to Deep bite in Dental Class 1 with vertical maxillary excess seeking orthodontic treatment. It is widely accepted that correction of deep bite is easier to accomplish and more stable when done on growing patients than those with no appreciable growth remaining. Adults often need only correction of excessive overbite either due to its isolated nature or a demand for limited treatment. In adults, this treatment is often part of periodontal, restorative or temporomandibular joint therapy.

Keywords: Temporomandibular joint therapy, Growth, Vertical overlapping.

1. INTRODUCTION:

Orthodontic treatment options to tackle negative discrepancy cases with or without extraction have always been controversial. Deep bite anteriorly could be caused by supra eruption of upper or lower incisors and infra eruption of posterior teeth. To evaluate whether an infra eruption or supra eruption is present, the orthodontist uses linear measurements from the base of the alveolar process [1,2]. The amount of eruption anteriorly or posteriorly can be established by Cephalometric analysis. For example, supra eruption of mandibular incisors often contributes to the anterior deep bite that accompanies most Class II malocclusion[3]. To evaluate the case we can measure the distance from the incisal edge vertically to the lower border of the mandible and compare this with the Cephalometric standards for the patient's age and sex. If the distance is increased, supra eruption of the incisor has occurred [4][5].

Diagnostic aids for Class 1 overbite include clinical examination, study models, cephalograms, photographs which can be examined clinically both intra orally and extra orally. Extra oral examination shows the features of deep bite with full face and profile evaluations that are made with the head in natural position. By relating the parts of the face to one another, the patient's principles and aesthetic problems were identified [6]. Deep bite can be classified as dentoalveolar deep bite and skeletal deep bite, true deep bite and pseudo deep bite or incomplete deep bite and complete deep bite[2,7][8]. The deep overbite may be caused due to Inherent factors like Tooth morphology, Skeletal

pattern and malocclusion, Condylar growth pattern and Acquired factors like Muscular habit, Changes in tooth position, the loss of posterior supporng teeth, Lateral tongue thrust habit. Anterior deep bite could be caused by supraeruption of upper and lower incisors or infraerupon of posterior teeth [2].

To evaluate whether infraerupon or supraerupon is present, linear measurements from the base of the alveolar process should be done by Cephalometric analysis. For stability in function and retention it is important to correct deep bite incisor relationships , to establish the proper inter-incisal relationship of overbite to overjet and inter-incisal angles.[9] Methods of deep bite correction include Extrusion of posterior teeth, Intrusion of anterior teeth, Combination of both, Proclination of incisors and Surgical. Adults with more than 6 mm overbite or 8 mm of overjet could be considered for surgery solely on the basis of dental relaonships ,without even considering facial esthetics [10].The surgical treatment options in deep bite patients are Orthodontics and interposional genioplasty, Orthodontics and Inferior onlay mandibuloplasty, Orthodontics and mandibular advancement, Orthodontics and total subapical mandibular advancement, Orthodontics and inferior repositioning of maxilla and mandibular advancement, Orthodontics and combined maxillary and mandibular surgery [11]. Our team has extensive knowledge and research experience that has translate into high quality publications[12],[13],[14],[15],[16],[17],[18],[19],[20],[21],[22],[23] ,[24–28][29],[30],[31]. Dento alveolar deep bite shows the following features that causes a lingual collapse of maxillary or mandibular anterior teeth. Occasionally a deep bite may be caused or accentuated by an aberration in the tooth morphology. This can be diagnosed by careful analyses of size and shape of the teeth [32] ., the study aimed at analysing the incidence of Deep bite in Dental Class 1 patients with vertical maxillary excess seeking orthodontic treatment.

2. MATERIALS AND METHODS:

2.1. Study Setting:

A retrospective study was carried out among patients in a University hospital setting. This is based on a university setting because data available was in the similar ethnicity with the particular geographic location. The trends in the other locations that were not assessed in the study setting. Ethical approval was taken from the universal ethical committee. In total, three reviewers were involved to cross verify data.

2.2. Sampling:

The sample was collected from records with patients' data like: PID, Name, Age, Gender and Date of their first visit from June 2019 to June 2021 and tabulation was done in a chronological order using Excel. Case sheet review was done under the examiner followed by cross verification.

The study sample size included patients with Deep bite in Dental Class 1 patients and data retrieved was n=19, out of which 6 were males and 13 were females. Statistical method used in this study was the Chi-Square test and the software was SPSS by IBM. Patients with Deep bite in Dental Class 1 relation were considered as dependent variables and their age and gender were considered as a definite variable. The type of analysis used was Correlation and association which is a descriptive type of data analysis.

3. RESULTS AND DISCUSSION:

In the study, we observed people of age range with Deep bite in Dental Class 1 patients <18 years (21.05%) , people of 18-30 years (42.11%) and >30years (36.84%) which was less comparatively (Figure - 1). Males with Deep bite in Dental Class 1 were at a higher rate (68.42%) than females (31.58%) (Figure-2). The association between the gender and age of patients with Deep bite in Dental Class 1 were in the age range of 18-30years, Females(black) had Deep bite in Dental Class 1 relation (31.58%) than males (gray) (10.53%) . In the age range of >30 years (15.79%) were males (gray) and (21.05%) were females (black). In the age range <18years males (gray) were (5.26%) and females (black) (15,79%) which was higher (Figure - 3).

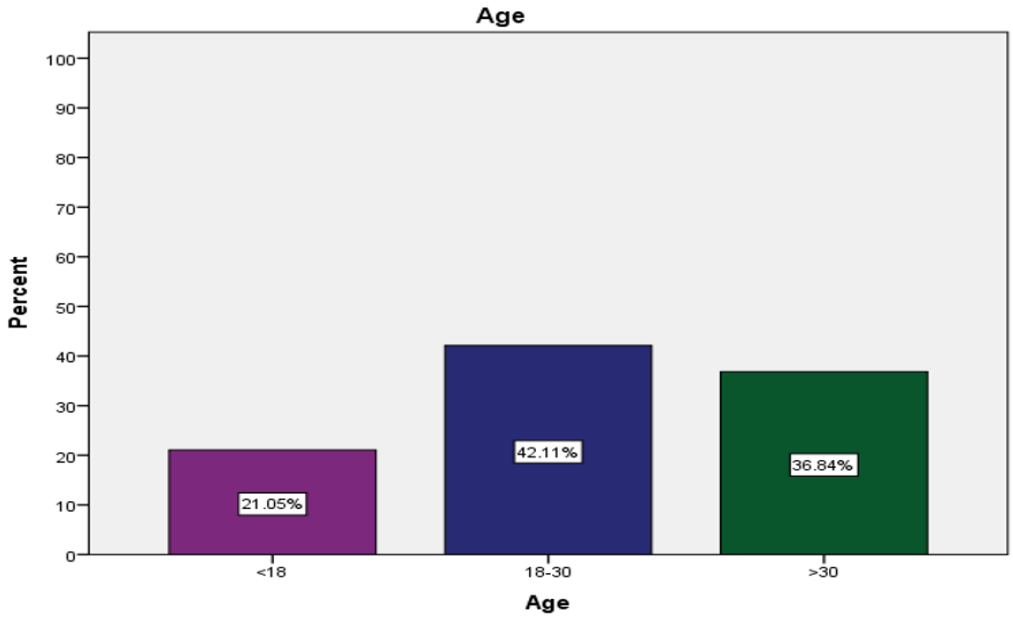

Figure-1 shows the bar graph of distribution of age among people with Deep bite in Dental Class 1 relation. The age group of patients were mentioned in X-axis which were categorized as <18years , 18-30years and >30years and the number of patients who were delivered with Deep bite in Dental Class 1 relation mentioned in Y-axis. Of these, people of the age range 18-30years were with Deep bite in Dental Class 1 at a higher rate (42.11%), people of >30 years (36.84%) and <18 years (21.05%) less comparatively.

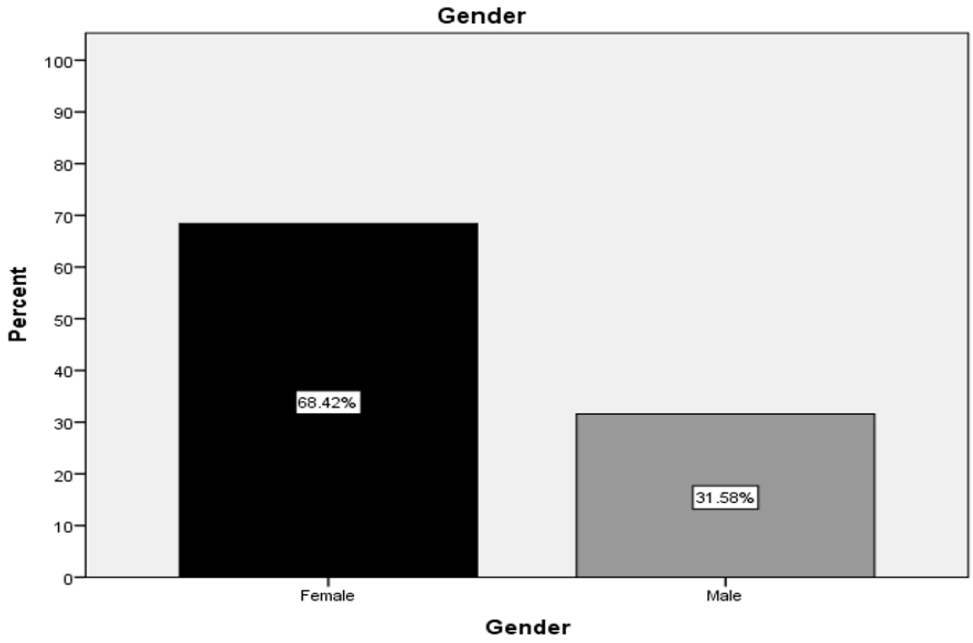

Figure-2 shows the bar graph of distribution of gender among patients who were with Deep bite in Dental Class 1 relation. X-axis represents Gender and Y-axis represents the number of patients with Deep bite in Dental Class 1 relation. Of these Males with Deep bite in Dental Class 1 (31.58%), followed by females (68.42%) which was lesser comparatively.

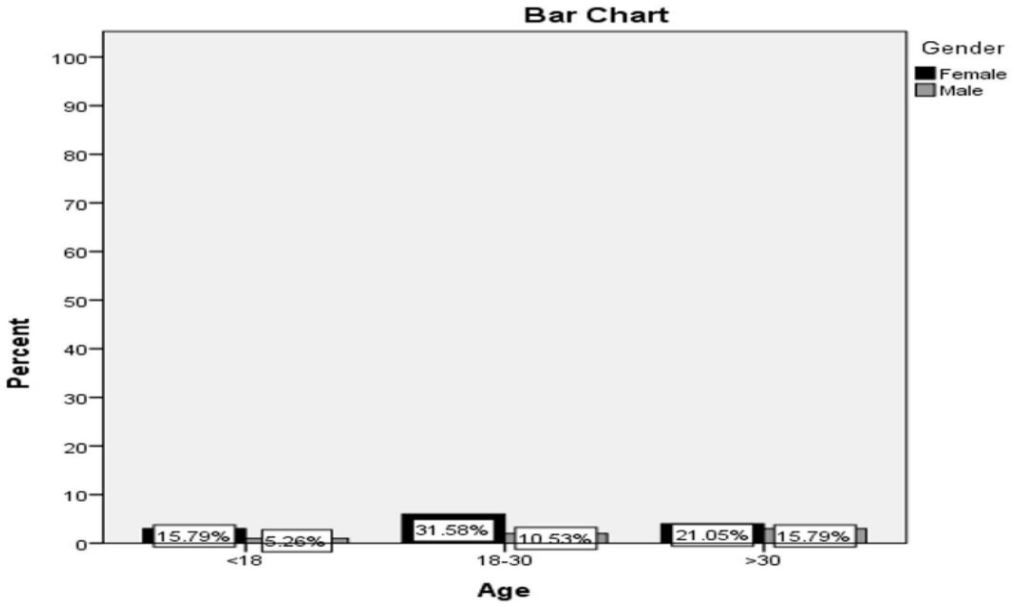

Figure-3 shows the bar graph representing the association between gender and age of patients who were with Deep bite in Dental Class 1 where X-axis represents the age association with gender and Y-axis represents the Percentage of patients with Deep bite in Dental Class 1. Males denoted in (gray), females in(black). Females with Deep bite in Dental Class 1 relation seems to be higher at the age of 18-30years. *p*-value >0.05 (Chi-square value - 0.652[a]; P-value : 0.722). Hence, it is statistically insignificant.

From the statistics performed, the bar graph shows the distribution of age among people with Deep bite in Dental Class 1 relation. The age group of patients were categorized according to the age range 18-30years with Deep bite in Dental Class 1 at a higher rate (42.11%), people of >30 years (36.84%) and <18 years (21.05%) less comparatively (Figure - 1). Leandro Silva Marques et al.,[33] opposed our study stating that the age group of 14years were highly prevalent. Dawlatly MM et al., [34] supported our stating that people age range 14-25 were highly prevalent with Deep bite in Dental Class 1 relation.

The distribution of gender among patients who were with Deep bite in Dental Class 1 relation showed Males with Deep bite in Dental Class 1 (31.58%), followed by females (68.42%) which was lesser comparatively (Figure - 2). Sundareswaran S et al., [35]opposed our study stating higher Male predilection. Awaisi ZH et al., supported our study stating higher female predilection. Leandro Silva Marques et al., showed both male and female equal predilection.[36]

The bar graph represents the association between gender and age of patients who were with Deep bite in Dental Class 1 and Percentage of patients with Deep bite in Dental Class 1. Females with Deep bite in Dental Class 1 relation seems to be higher at the age of 18-30years. *p*-value >0.05 (Chi-square value - 0.652[a]; P-value : 0.722). Hence, it is statistically insignificant (Figure - 3). Sonnesen L et al [37]., supported our stating that Females with Deep bite in Dental Class 1 relation seems to be higher at the middle aged population. Fabio Ciuffolo et al., also supported the study and almost all the studies were in consensus with the above.[38]

LIMITATIONS OF THE STUDY:

The study was undertaken with a small sample size hence, it should be generated to a larger population. This altered response was obtained because of the absence of patients own perception which was affected by the time of calling, social factors.

FUTURE SCOPE:

Study for a larger population should be done. For the diagnosis and treatment planning of all patients should be recorded.

4. CONCLUSION:

Within the limits of the study, it was concluded that most of the Female patients were incident to Deep bite in Dental Class 1 with vertical maxillary excess. Adults often need only correction of excessive overbite either due to its isolated nature or a demand for limited treatment. In adults, this treatment is often part of periodontal, restorative or temporomandibular joint therapy.

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CONFLICT OF INTEREST: Nil

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