The Prevalence Of Gingival Recession Among Different Types Of Malocclusion

Research Article

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Abstract

Gingival recession is one of the most common esthetic and undesirable problems that causes distress among individuals of all ages. Identifying and diagnosing such common clinical entities at an early stage helps to restrict its progression through preventive methods. The aim of the study is to assess the prevalence of gingival recession among different types of malocclusion. It was a retrospective study of patients reporting to Saveetha Dental College And Hospitals, Chennai for various treatments. Data was obtained from the patients records. Data extraction was done and was segregated based on 1) age 2) gender 3) types of malocclusion 4) Recession 5) Site. After data collection statistical analysis was done in IBM SPSS software. In this present study 67.9% of males and 32.1% of females with recession had malocclusion. The most common age group that was affected was 31-35 years. The most common type of malocclusion present in recession patients was Class II Div 1. From the chi square test performed for analysis of statistical significance between the site of recession and type of malocclusion it was found there is a negative correlation. The p value was .444 (p>0.05). The chi square test performed to determine the correlation between recession site and gender, it was found that maximum recession was seen in the anterior teeth of male patients. P value was 0.051 (p <0.05),statistically significant. Within the limits of the present study it can be concluded that the most common age group affected was 31-35 years. Male gender was most commonly affected. The most common type of malocclusion with recession was class II div 1.

Keywords: Anterior Teeth; Gingival Recession; Malocclusion; Recession; Types Of Malocclusion.

Introduction

Periodontitis is an inflammatory disorder of the periodontium which is caused by the destruction of periodontal tissues namely the PDL, cementum, alveolar bone, and gingiva. Periodontal disease includes both gingivitis and periodontitis. Gingivitis which is caused due to bacterial plaque accumulation is considered as the key risk factor for the onset of periodontitis. Plaque does not just contain bacteria but it also contains viruses which can cause disease progression [1]. Tumor necrosis factor-alpha is an important proinflammatory mediator that causes destruction of periodontal tissues [2]. Similarly in a recent study it has been reported the association between Interleukin-21 levels with periodontitis [3]. ET-1 has also been identified in periodontal diseases [4, 5]. Periodontitis can be associated with various systemic conditions [6]. The features of periodontitis are gingival enlargement , bleeding on probing, clinical attachment loss, gingival recession ,mobility of teeth and furcation involvement. One of the most common esthetic concerns among the patients is associated with gingival recession . Gingival recession is the exposure of the root surface due to migration of the gingival margin apical to the cementoenamel junction. It may be localised or generalised and can be associated with one or more tooth surfaces [7]. Gingival recession has several clinical consequences, including esthetic compromise,

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difficulty in maintaining oral hygiene ,dentin hypersensitivity and increased risk of dental caries [8, 9]. The etiology of the conditions is multifactorial and may include tooth malposition, path of eruption ,tooth shape ,profile and position in arch, alveolar bone dehiscence, muscle attachment and frenal pull,periodontal disease and treatment, orthodontic treatment and other self inflicted injuries [10, 11]. The most important factor causing increase in gingival recession is thin gingival biotype [12]. The mucogingival complex consists of free gingiva and attached gingiva,mucogingival junction and alveolar mucosa. In an adequate mucogingival complex, the mucogingival tissues have the ability to sustain the biomorphological integrity and can also maintain an enduring attachment to the teeth and the underlying soft tissue, which is always essential. When a mucogingival problem occurs, there are two ways in which it can present itself . Frist, as a close disruption of the mucogingival complex resulting in pocket formation. Second, as an open disruption of the mucogingival complex resulting in gingival clefts and gingival recession [13]. Gingival recession will increase in both prevalence and severity with age. The mandibular incisor region is the most commonly affected region [14, 15].

The management for gingival recession is surgical therapy like free graft and pedicle flap are indicated when the gingival recession causes functional or esthetic problems. Coronally displaced flap is a treatment of choice for recession defects [16]. A team has worked on various regenerative therapy that has been indicated for periodontally compromised patients [17-19] and other treatments such as lip repositioning [20]. If the esthetics and function had to be restored dental implants and implant-supported prosthesis can be a predictable treatment modality in periodontal diseases [21]. While performing surgical therapy trauma to the inferior alveolar nerve is one of the complications during surgical procedures in the posterior mandible [22].Various antimicrobial and chemotherapeutic agents such as chlorhexidine mouth washes , triclosan are employed for the management of periodontitis [23]. Herbal medicines and preparations can also be used for the management of periodontal diseases [24].

As discussed before etiology of gingival recession is multifactorial, one of the reasons for gingival recession is malpositioning of teeth and malocclusion. Normal occlusion of the teeth in their respective arches were considered anatomically and functionally essential for the development and maintenance of a healthy dentition [25]. Several authors have reported that malocclusions and malpositioned teeth are significant factors for the etiology of periodontal disease [26, 27]. An excessive functional stress can initiate inflammatory changes in the periodontium and thus enhance destructive bacterial processes [28]. Abnormal tooth position may also result in deficient oral hygiene and consequent accumulation of bacterial plaque which maybe lead to periodontal diseases. When any type of malocclusion is diagnosed , the teeth should be aligned to redirect occlusal forces that act along the tooth axis and are harmoniously distributed and rule out occlusal trauma which may affect periodontal health [29, 30]. Previously our team has a rich experience in working on various research projects across multiple disciplines. [31-45]. The aim of the study is to evaluate the prevalence of gingival recession among different types of malocclusion.

Materials And Methods

This was a retrospective study in which 86000 patients were reviewed. Data was extracted from patients record ,Saveetha Dental College And Hospital, Chennai. The data obtained from the patient's record was from june 2019 to march 2020, out of which 53 patients had both recession and malocclusion. The study included 36 males and 17 females. The data segregation was done based on 1) age 2) gender 3) types of malocclusion, 4) site 5) recession. Based on the age the data was segregated into 3 groups (18-25), (26-30),(31-35),(36-40). Based on the type of malocclusion by angles it was divided into 7 groups; Angles class I, Angles class II, angles class II div 1, Angles class II division 1 subdivision ,Angles class II div 2, Angles class III,Angles class II subdivision. The examination of patients was done using the clinical photographs obtained from patients records and orthodontic and periodontal diagnosis was also evaluated. The data obtained was then tabulated in excel sheet and then transferred to SPSS software for statistical analysis. The software that was used for the statistical analysis was IBM SPSS software version 20. Descriptive statistics were performed and frequencies were found for each variable. Chi square test was the statistical test that was performed to determine the significance.

Results And Discussion

In the study 67.92% of males and 32.1% of females with recession had malocclusion. The most common age group that was affected was 31-35 years by 39.62%. Recession was most commonly seen in the anterior region by 86.8%. The most common type of malocclusion seen was Angles Class II div 1 by 56.60%. It was found from the chi square test that there is no correlation between type of malocclusion and site of recession with the p value: .444 (p >0.05). From the chi square test performed to determine the correlation between recession site and gender, it was found that maximum recession was seen in the anterior teeth of male patients. P value was 0.051 (p <0.05),statistically significant.

The aim of the study is to evaluate the prevalence of gingival recession among different types of malocclusion. Mucogingival deficiencies in the anterior teeth especially in the incisors and the development of recession have been related to many etiological factors. Among the various factors predisposing to this condition, malocclusion is of particular interest as improper occlusion can lead to consequent periodontal changes.

In the present study, from the chi square test performed to determine the correlation between recession site and gender, it was found that maximum recession was seen in the anterior teeth of male patients. P value 0.051 (p <0.05),statistically significant. It was found from the study that the gender that was most commonly affected with recession and malocclusion was male by 67.92%. In a study conducted by Jaeahir Ahmad Gani et al., with a concurrent finding it was reported that gingival recession was higher in male by 68.7% and females by 31.3%. [46]. Similarly in a study conducted it was reported that males were more commonly affected [47]. In a previous study conducted it was reported that the gender affected with gingival recession is male by 68% [48]. In the present study patients with recession were mostly affected by class II div 1 malocclusion. In a previous study conducted by Estela Santos Gusmão et al., it was reported with a dissimilar finding that 67.8% of patients with buccally tipped teeth had recession and 67.8 % of patients with maxillary incisors proclination had gingival recession [49]. In another study conducted by Yuri Rodriquez et al., it was reported that 27.5 % of gingival recessions

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Figure 1. Bar graph shows the percentage distribution of patients with recession and malocclusion. X axis shows the age group of patients and Y axis shows the percentage of recession patients with malocclusion. 18-25 years age group 20.75% (blue), 26-30 years age group 22.64% (green), 31-35 years age group 39.62% (beige), 36-40 years 16.98% (yellow). From the graph we can infer that the most common age group with recession and malocclusion was 31-35 years by 39.62%.
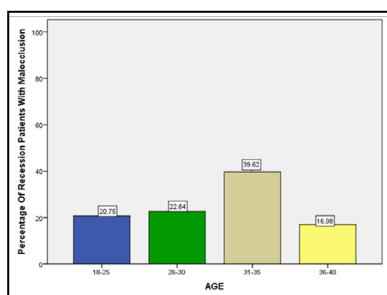

Figure 2. Bar graph shows the percentage distribution of patients with recession and malocclusion. X axis shows gender and Y axis shows percentage of recession patients with malocclusion. 67.92% of patients with recession and malocclusion were male (blue) and 32.08% of patients were female (green). From the graph we can infer that the most common gender with recession and malocclusion was male by 67.92%.
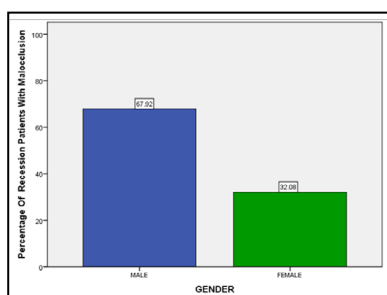

Figure 3. Bar graph shows the percentage distribution of malocclusion in patients with recession. X axis shows the malocclusion types and Y axis shows percentage of recession patients with malocclusion. Majority of patients with recession had class II div 1 malocclusion by 56.60% (beige) and the least number of patients with recession had class II malocclusion by 1.887% (green). From the figure we can infer that the common type of malocclusion that is prevalent in recession patients is angle's class II div 1 by 56.60%.
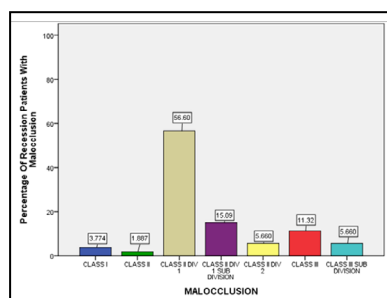

Figure 4. Pie chart shows the percentage distribution of sites at which recession is more prevalent in patients with malocclusion. From the pie chart it is evident that 86.79% of patients with malocclusion had recession in the anterior teeth (blue) and 13.21% patients with malocclusion had recession in the posterior teeth (green). From the graph we can infer that the most common site for recession is anterior teeth (86.79%).
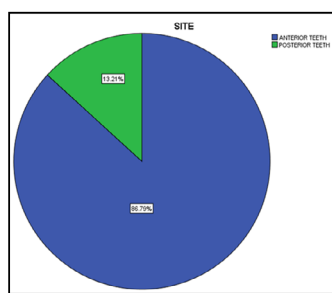
were associated with vestibular inclination movement [50]. The results obtained from the present study shows that the most common age group that was affected was 31-35 years by 39.62%. In a study conducted by S. Reddy Manchala et al. It was reported with a dissimilar finding that the most common age group in which gingival recession was seen the most is 36-45 years [48]. In another study conducted it was found that the age group that was affected with recession was above the age of 30 years [47]. In the present study it was found that gingival recession in the anterior region is more prevalent in patients. A study with similar findings reported that gingival recession is present with crowding in the anteriors by 21.2% and gingival recession is more commonly seen in upper left central incisors by 35.6% [51]. In another study with a similar finding conducted by Kemal Ustun et.al., it was found that severe gingival recession was present in the mandibular canine and incisors with molar relationship angle's class III [28]. Our institution is passionate about high quality evidence based research and has excelled in various fields [52-62].

The limitation of the study was the limited sample size and it doesn't include the ethinic group. It was a single centered study. The future scope of the study is that a prospective study can be

Figure 5. Bar graph shows the association between malocclusion classification with sites affected. X axis shows the types of malocclusion and Y axis shows the number of recession patients with malocclusion. Anterior teeth (blue) and posterior teeth (green). From the graph we can infer that class II div 1 (50.94%) was the type of malocclusion that was prevalent in patients with recession in the anterior teeth. However chi square test shows p value .444 (p >0.05) was statistically not significant.
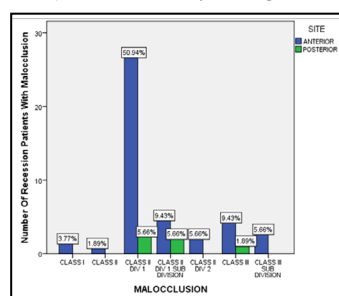
Figure 6. Bar graph shows the association between the site of recession with gender of the study population. X axis shows the gender of the study population and Y axis shows the number of recession patients with malocclusion. Anterior teeth (blue) and posterior teeth (green).From the figure we can infer that male patients had maximum recession in the anterior teeth (54.72%). Chi square test shows p value .051 (p <0.05) was statistically significant.
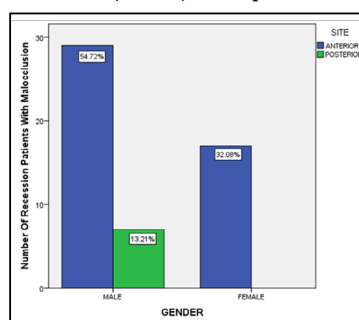
performed with a larger population.

Conclusion

Based on the present study the most prevalent age group was 31-35years. Male (67.92%) were more commonly affected than females (32/08%). Majority of recession patients had class II div 1 malocclusion. Recession was most commonly present in anterior teeth. An association was present between the site of recession and gender of the patients with malocclusion.

Authors Contribution

Gayathri R Menon, Dr Shankari Malaiappan were the main contributors to the concept, design, literature analysis, workshop discussions, and drafting and revising manuscript. Dr Shankari Malaiappan and Dr Kiran Kumar contributed to drafting and revising manuscripts. All authors gave final approval of the version to be published.

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