

Assessment Of Patient Acceptance Towards Midline Diastema Correction - A Retrospective Study

Research Article

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Abstract

Background: Midline diastema is a space or gap between the maxillary central incisors. The presence of midline diastema or space in between anterior teeth is a major esthetic concern for patients.

Aim: To assess the patient acceptance in midline diastema correction and to evaluate patient preference towards treatment.

Materials and Methods: Retrospective study was conducted and data collection was done by reviewing 7000 patient records from June 2019-April 2020. Patients with midline diastema above 18 years of age were selected fulfilling the inclusion criteria. The patient age, gender, treatment acceptance and preferred treatment data was obtained and entered in Excel spreadsheet and data was imported to IBM SPSS version 20 for statistical analysis. Chi square test was applied and the level of significance was set at $p < 0.05$.

Result: The results of the study proved that, overall acceptance towards midline diastema correction was 70.38%. Maximum 18 to 30 years age group of patients had undergone treatment (38.46%) and majority of them were females (47.69%) which showed significant association between treatment acceptance based on age and gender ($p < 0.05$). The most preferred treatment of choice was found to be restorative option (35%).

Conclusion: The overall acceptance towards midline diastema correction was 70.38%. The most accepted age group being 18 to 30 years with female predominance and the conservative restorative procedure was the most preferred treatment of choice followed by prosthetic and orthodontic correction which might be due to cost and duration factor.

Keywords: Midline Diastema; Diastema Closure; Patient Preference; Treatment Acceptance.

Introduction

Dental patients are more conscious of their appearance and have raised the importance of the smile within society as a whole. Dentists greatly contribute to enhancing a patient's smile, appearance and subsequently self confidence. Angle described the dental midline diastema as a rather common form of incomplete occlusion characterized by a space between the maxillary and less frequently the mandibular central incisors [1-3]. The space can be a normal growth characterised during the primary and mixed dentition and generally is closed by the time maxillary canines erupt. When the space is not closed even after the adult dentition is attained the etiology of midline diastema can be due to tooth material deficiency,

physical impediment habits, artificial causes, racial predisposition. Then the presence of space in between anterior teeth becomes a major esthetic concern for patients.

The etiologies related to diastema include oral habits, muscular imbalances, physical obstructions, abnormal maxillary arch structure, and various dental anomalies. The most common factor associated with maxillary midline diastema is a hypertrophic labial frenum [4, 5]. The attachment of the labial frenum into the notch in the alveolar bone so that a band of heavy fibrous tissue lies between the central incisors. The two central incisors may erupt widely apart from one another, and the rim of bone surrounding each tooth may not extend till the median suture. In such cases,

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bone is not deposited inferior to the frenum. A V-shaped bony cleft exists between the two central incisors, and an "abnormal" frenum attachment typically results. Enlarged labial frenum have been considered to be a contributing factor for a majority of persistent diastemas, but this has now been attributed only to the small proportion of cases [6]. Also sometimes, transseptal fibers fail to multiply across the midline cleft, and space might never close [7-9].

Numerous studies have been investigated on the prevalence of diastema. Consequently, there was a wide range of findings from 1.6% to 25.4% in adults and an even greater range in groups of young people [10, 11-13]. Differences in epidemiological study findings may be attributed to the increased number of factors contributing to midline diastema, to the definitions used to explain its presence and to gender and race differences in the distribution of the hereditary feature in question. As listed above there are many studies have been conducted around the world regarding prevalence but fewer literature presented about a treatment acceptance and patient preferred treatment of choice. As various treatment options are available for diastema closure in adults like orthodontic movement, conservative restorative procedure and prosthodontic management, hence this study aimed to assess the patient acceptance in midline diastema correction and to evaluate patient preference towards treatment.

Materials and Methods

Study setting

Study was conducted by reviewing the patient records from June 2019-March 2020 visiting Saveetha dental college and Hospitals. Ethical approval was obtained from the institutional ethics committee.

Inclusion criteria

Adult patients who presented with midline diastema up to 4mm with presence of central incisors were included in the study.

Exclusion criteria

Patients with hypertrophic or malposed labial frenum, supernu-

merary teeth at the midline, patients with midline pathologies, congenitally missing lateral incisors, microdontia, Patients with malocclusion were excluded from the study.

Data collection

The data timeline included the patients who were with midline diastema between June 2019 to March 2020. After reviewing 6500 case sheets, patients fulfilling the inclusion criteria of about 260 patients were chosen. Those chosen patient age, gender, acceptance towards treatment, and preferred treatment of choice were gathered and tabulated. By 2 examiners cross verification of the data was done to minimize the sampling bias.

Data Analysis

The tabulated data was statistically analysed by IBM SPSS version 20 to assess the prevalence and choice of treatment chosen by patients. Data was imported and variables were analysed. Pearson's chi square test was applied. Level of significance was set at $p < 0.05$.

Results and Discussion

The study comprised a total of 260 midline diastema patients of which 33.08% patients were males and 66.92% were females (Figure 1). The results showed that midline diastema correction was accepted by maximum patients (70.38%) (Figure 2). Maximum individuals chose restorative management as a treatment of choice (35%), followed by prosthetic management (18.46%) and orthodontic management (16.92%) (Figure 3).

The association bar graph represented in figure 4 shows treatment acceptance based on age group, in age group of 18 to 30years the acceptance rate was 38.46%, in the age group of 31 to 40years it was about 16.54 %, and in 40years and above 15.38% of patients accepted. The acceptance rate among 18 to 30yr age group were seems to be higher (38.46%) when compared to other age groups showing statistical significant association between age group and treatment acceptance, $p=0.002$ which denotes statistically significant ($p < 0.05$).

The association bar graph represented in figure 5 shows treat-

Figure 1. The graph representing the distribution of midline diastema patients according to gender. X axis represents gender and Y axis represents the no of patients. The above graph depicts that 66.92% of the patients are females and 33.08% are males.

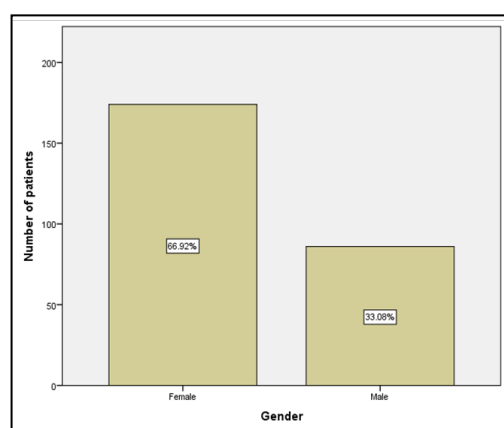


Figure 2. The graph representing acceptance towards treatment (Yes -acceptance, No-not accepted). X axis represents the acceptance and Y axis represents the no of patients. Around 70.38% of the patients accepted the treatment and 29.62% did not accept.

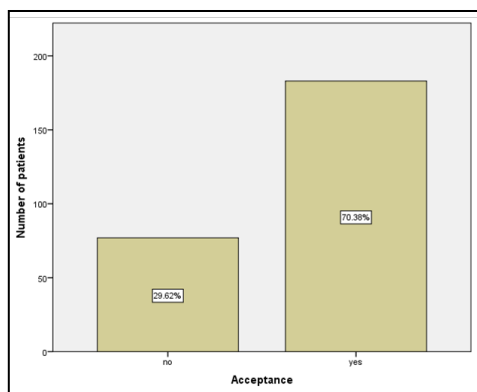


Figure 3. The graph representing the percentage of various treatment options. X axis represents the type of treatment and Y axis represents the no of patients. 29.62% did not accept for any treatment, 16.92% accepted for orthodontic correction, 18.46% accepted for prosthetic management and restorative correction was chosen by 35%.

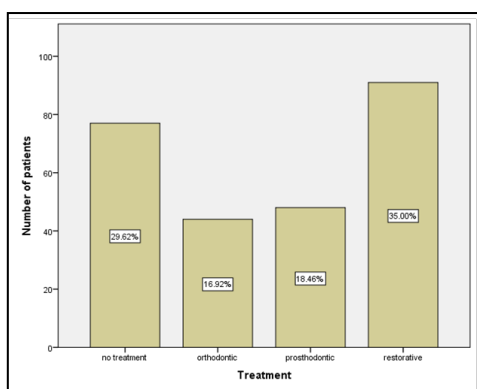
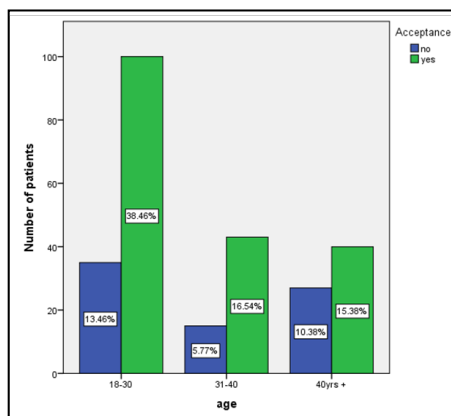


Figure 4. The graph representing treatment acceptance based on age group. X axis represents the age group and Y axis represents the number of patients. The blue bar represents (yes) and green bar represents (No). Chi square analysis showed statistical significant association between age and acceptance. Pearson's chi square value is 0.618, df-3 and p = 0.002 (> 0.05) which denotes statistically significant. The treatment acceptance towards midline diastema correction was commonly seen among 18 to 30 year age groups when compared to the other age groups.

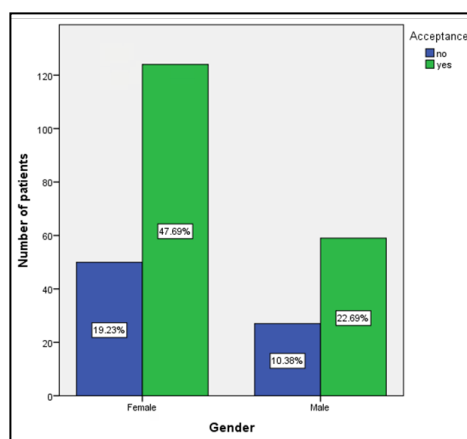


ment acceptance based on gender. Treatment acceptance among females (47.69%) were seem to be higher when compared to males (22.69%) showing significant association between gender and treatment acceptance, p value=0.006 which denotes statistically significant (p<0.05).

Dental patients are more conscious of their appearance and have raised the importance of the smile within society as a whole. Maxillary midline diastema create a dark spot within the smile, which prompts many patients to seek treatment. In this study it

was found that females had more prevalence of midline diastema than males. The study done by Luqman et al proved that midline diastema prevalence was seen higher among males when compared to females [14] which is contrary to our study but in another study done by Zainab et al stated that prevalence of midline diastema was more common among females when compared to males [15] which is in accordance to our study. The results of the study proved that most of the patients accepted towards midline diastema correction. Among different types of treatment for choice

Figure 5. The graph representing treatment acceptance based on Gender. X axis represents gender and Y axis represents the number of patients. The blue bar represents (yes) and green bar represents (No). Chi square analysis showed statistical significant association between gender and acceptance. Pearson's chi square value is 0.195 , df= 1, p value = 0.006 (<0.05) which denotes statistically significant, higher acceptance was seen among females when compared to males.



among patients is represented in (Fig 3) which showed, most of the patients have chosen conservative restorative option for midline diastema correction which is in correlation to another study [6, 16-19]. Many of the patients does not want to go for orthodontic treatment, may be a reason behind is relapse, As said by sullivan et al relapse of maxillary midline diastema appears almost 34% of all cases [20, 21]. Another study with one year follow up ,done by Korkut et al showed high esthetic and durability of restoration of direct composite resin for maxillary midline diastema [22]. Among 70% of the patients of acceptance ,50% of them preferred conservative restorative management which is in accordance with the other study [23, 24] and remaining 24% accepted for orthodontic management and 26% accepted for prosthodontic management. These treatment choices were least preferred because of time consumption and cause of relapse in orthodontics. Hence the conservative restorative method of correction was the most preferred by many patients.

When discussing the age group, patients with 18 to 30 years of age accepted the most for midline diastema correction. The treatment acceptance based on gender showed females have accepted for the midline correction maximum which may be due to high esthetic demand in females. In the present study few patients of about 29.6% did not accept or undergo any treatment. The study done by Israa et al concluded that 56.2% satisfied with the midline diastema, they did not undergo any treatment [25] reason due to different geographic location, which was contrary to the present study.

It's also been proved that quality of life of patients and confidence will drastically improve after treatment of midline diastema [26]. Hence the appropriate technique and material for effective treatment based on time, physical, psychological and economical limitations to be considered. Patient motivation and compliance factor should be considered when a patient chooses for orthodontic correction due to its long duration as patient demand for aesthetic dentistry with minimally invasive procedures has resulted in the extensive utilization of restorative management either conservative or prosthetic as an option. Also when alignment of the teeth is not a treatment of choice for a patient, restorative option serves the need, but again the duration of the restorative material is a matter of concern. Many patients preferred restora-

tive treatment as an option in our present study may be due to several advantages such as low cost, no tooth preparation, least invasive, no need for anesthesia and reversibility of the procedure, less appointment time. Hence high durable long lasting restorative material is the need for the future. Extensive research is required considering the socioeconomic status and treatment acceptance also the longevity of the material.

Conclusion

Within the limits of the current study, the overall acceptance towards midline diastema correction was 70.38%. The most accepted age group being 18 to 30 years with female predominance and the conservative restorative procedure was the most preferred treatment of choice followed by prosthetic and orthodontic correction which might be due to cost and duration factor.

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