

Factors Influencing Temporary Partial Denture as a Treatment of Choice-An Institution Based Retrospective Study

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Abstract

Modern dentistry offers many options for the restoration of partially edentulous mouth, like Temporary Partial Denture (TPD), Removable Partial Dentures (RPD), fixed bridges and dental implants. Temporary partial dentures became very popular many decades ago in dentistry due to the cost effectiveness and less time consumption. Many patients choose temporary partial dentures due to factors ranging from cost to physiology. Today, many dentists are advising temporary partial dentures because they make better and durable appliances and can be provided for periodontally compromised dentitions with less bone density. The aim of the study was to evaluate the factors for selection of TPD as a treatment of choice in a teaching institution. A retrospective study was carried out using case records of 761 patients who reported to the Department of Prosthodontics from June 2019 to March 2020. The various reasons for preferring temporary partial denture as treatment of choice were observed from the digital records and tabulated on a spreadsheet. The collected data was analyzed by computer software SPSS version 21 using Chi square test indicating the level of significance. The reasons for choice of temporary partial denture as a treatment were for space maintenance before placing implants (17.2%), inadequate space for fixed replacement (0.5%), patient willingness and affordability (3%), long span edentulousness (0.3%), periodontally compromised dentition (78%), and space maintenance during orthodontic treatment (0.5%). The periodontally compromised dentition was the most common reason for opting temporary partial denture as a treatment of choice. The factors for selecting temporary partial denture as a treatment of choice had significant association with age and no association with gender.

Keywords: Periodontally compromised dentition; Interim partial denture; Removable partial denture; Space maintainer

Introduction

Missing teeth has a great effect on the quality of life of the patient. It has a major impact on the lives of some people, even those who are apparently coping well with dentures. The professional needs to consider how it can prepare people for the effects of tooth loss.^[1]

The number of partially dentate adults are increasing, partly because of an increased life expectancy, a rise in the number of elderly individuals in the population, and due to a shift from total tooth loss or total edentulism toward partial edentulism.

Dentofacial problems have well known effects on patients' satisfaction with their dentition as they improved maintenance of oral health has led to people losing fewer teeth, resulting in an increased requirement for treatment of partial edentulism rather than complete edentulism. Many patients seek for replacement of missing teeth and supporting structures to enhance appearance, improve masticatory.

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efficiency, prevent unwanted movement of teeth, like supraeruption or drifting, and to improve phonetics. Replacement of missing teeth with removable prosthesis improves patient comfort, masticatory effect, esthetics and maintains the health and integrity of dental arches. [5,6]

Factors that help dentists predict therapeutic benefits of deciding on the need for denture placement are old prosthesis which were by the patient type of jaw and gender of the patient. Removable partial dentures are also the best practice therapy for many clinical scenarios, such as long edentulous spans, need for esthetic support and transitional prostheses for the failing dentition. [7,8]

Patient related factors such as dental status affects the wear behaviour should be taken into consideration while treating the patient with removable dentures. [9]

Temporary partial denture prosthesis are being used for anatomical, medical and economic reasons. Partial denture prosthesis rehabilitation improves the ability of mastication and reduces the bolus particle size but does not reestablish the masticatory function fully.

The correlation between edentulism be it complete or partial and lower socioeconomic status, removable partial dentures will likely remain an important treatment option compared with more costly alternatives.

Because secondary costs are related to the oral and systemic health consequences of wearing removable partial dentures, a significant need exists to advance the materials and technologies associated with these devices. [10,11]

Temporary partial denture also causes periodontal damage to the abutment leading to higher gingival recession, probing depth in dices, presence of caries and fracture of the teeth. The masticatory forces cause fatigue abutments and adversely affect the dentation. [12]

With the increasing incidence of periodontal diseases and development of antibiotic resistance, there is a global need of awareness. [13] Hence, periodontal status is to be assessed before temporary partial denture is taken as a treatment of choice. [14]

The initial periodontal assessment includes Plaque Score (PLS), Bleeding on Probing (BOP), Probing Pocket Depth (PPD), Loss of Attachment (LOA), furcation involvement. [15,16]

Patients with anemia and diabetes mellitus have an increased risk for periodontitis or gum disease so history taking is to be done properly prior choosing temporary partial denture as a treatment of choice and providing a useful and comfortable removable partial denture with a proper design, planning, and maintenance is important.

Previously noted failure rates of removable partial dentures have led many to conclude that removable partial dentures are harmful to periodontal tissue and may contribute to carious lesion formation.

However, more recent studies have concluded that while the risk of root caries and gingivitis increases, periodontal diseases generally occur only in patients with poor hygiene and poorly constructed removable partial dentures.

Poor removable partial denture design can exacerbate plaque retention problems, so practitioners should always consider the partial denture design that will best preserve the abutment teeth and edentulous ridges.

Factors which influence selection of temporary partial denture as a treatment of choice include periodontally compromised oral hygiene, arch width, periodontal status, opposing teeth, number of teeth present, patient's willingness, affordability, socio-economic status and oral hygiene of the patient. The selection also requires knowledge as well as experience of the dentist. [17]

The steps in removable partial denture-related therapy include the evaluation of abutment teeth followed by evaluation of abutment tooth position, followed by abutment tooth preparation, adaptation of the removable partial denture metal framework, relating the edentulous areas to the metal framework, patient education for maintenance of the denture, and regular professional recall. Teeth that are of a proper size are essential in achieving a natural looking denture. [18]

Previously our team has a rich experience in working on various research projects across multiple disciplines. [19-33] This research helps find out various treatment options explained to the patients so that the patient can make an informed decision.

The aim of the study was to assess the factors influencing temporary partial denture as a treatment of choice in an institution.

Materials and Methods

Study design

In this retrospective study, data from patient's records within the institution were revised and the data of patients who received temporary partial denture 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 received temporary partial denture were reviewed to check the factors and preference of treatment.

Subjects and procedures

Data were collected from June 2019 to March 2020 for 761 patients who received temporary partial denture as treatment for the partially edentulous space. The following data were retrieved from the dental records: patient age, gender and factors for selection.

Statistical analysis

The statistical analysis was done using SPSS software version 21.0 (SPSS Inc., Chicago, IL, USA). The data was verified by Saveetha ethics 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, gender and factors for selection.

Results

A total of 761 patients from the age group of 18 to 84 years were included in the present study. The factors influencing temporary partial denture as a treatment of choice were for space maintenance before implants until the bone was adequate (17.2%), inadequate space for fixed replacement due to migration or supra eruption (0.5%), patient willingness and affordability (3%), long span edentulousness (0.3%), periodontally compromised dentition with compromised bone support for a fixed prostheses (78%), and space maintenance during orthodontic treatment in case of congenitally missing teeth (0.5%). The periodontally compromised dentition being the most common reason for opting temporary partial denture as a treatment of choice [Figure 1].

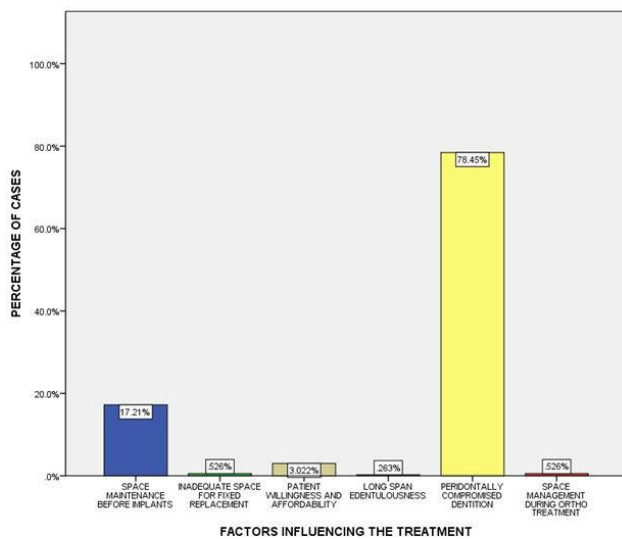


Figure 1: Bar chart represents frequency distribution of factors influencing partial denture as a treatment of choice. X-axis represents different factors influencing the treatment and Y-axis represents the percentage of cases. The most common reason influencing the treatment was periodontally compromised dentition (78.45%) (yellow colour).

Discussion

The study results show the association of age and factors influencing partial denture as a treatment of choice [Figure 2] which was similar to the result of Applegates et al. which stated that the condition of remaining teeth has been further

impaired by the cervical loss of supporting bone with age which becomes another complication for partial dentures, age had significant correlation with bone loss and periodontal condition of the teeth and the choice of treatment [34] and a study by de Fonteporcarreiro et al. stated that mean bleeding on probing and mobility values increased form initial assessment to after 7 years of partial denture use in every group hence the periodontal condition of region dentition should be assessed before treatment planning. Our study also shows significant correlation between age and the factors influencing the treatment (p value=0.001). Our institution is passionate about high quality evidence based research and has excelled in various fields. [35-41]

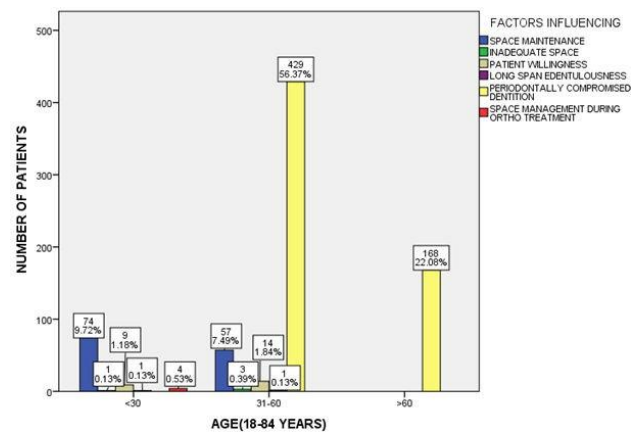


Figure 2: Bar chart represents the association between age of the patients and factors influencing partial denture as a treatment of choice. X-axis represents the age of the patient and Y-axis represents the number of patients.

Periodontally compromised dentition (yellow colour) was the most common reason for selecting partial denture as a treatment between 31-60 years (56.37%) and above 60 years (22.08%).

And space maintenance before implants placement (blue colour) was the most common below 30 years (9.72%). Association between age and temporary partial denture as treatment was analyzed with Chi-square test and it was significant (P value=0.001).

The results of the study shows association of gender and factors influencing partial denture as a treatment of choice [Figure 3] which was dissimilar to the results of Kamber-Cesir's which stated that of all the factors estimated in their study only gender was found to have influence on patient's satisfaction. [42]

The study results were dissimilar to that of Al Quran et al. which stated that females chose to replace the missing tooth, with fixed or implant treatment option more than removable treatment modality and this could be due to the fact that women are more conscious about their appearance.[43]

However our study shows no significant correlation between gender and the factors influencing the treatment (p value=0.492).

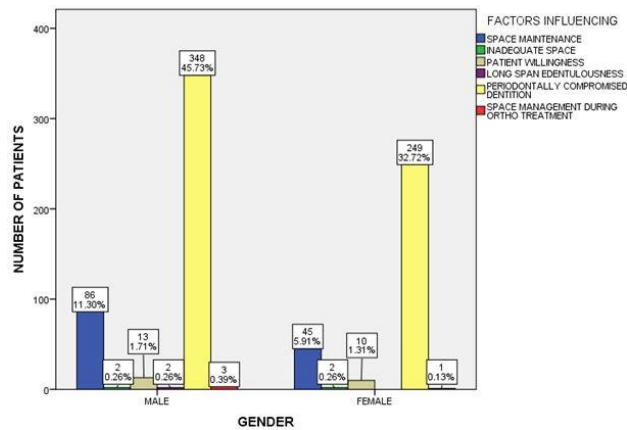


Figure 3: Bar chart represents the association between gender of the patients and factors influencing partial denture as a treatment of choice. X-axis represents the gender of the patient and Y-axis represents the number of patients. Periodontally compromised dentition (yellow colour) was the most common reason for selecting partial denture as a treatment among both male (45.73%) and female (32.72%) patients. Association between gender and partial denture as a treatment was not significant (Chi square test P value=0.492).

In our study in both genders periodontally compromised dentition (Male-76.65%, Female-81.11%) was the most common reason for choosing temporary partial dentures followed by space maintenance before implants (Male-18.94%, Female-14.66%) and patient willingness and affordability (Male-2.86%, Female-3.26%).

Oral hygiene, the presence of plaque and gingival inflammation, attachment loss, remaining osseous support, and mobility of supporting teeth should be thoroughly examined. Diagnosing periodontal conditions that would compromise the prognosis of a successful treatment outcome in a long run was the goal. One of the most important parameters is the patient's level of oral hygiene. It is critical that the patient is educated with regard to oral hygiene. A long-term clinical service without any detrimental effects on the periodontal condition of the remaining natural teeth is ensured in case of a properly designed and maintained temporary partial denture, given that preprosthetic periodontal health has been checked and maintained with consistently healthy oral environment. Therefore, the control of dental plaque is crucial to obtain good denture prognosis and performance for a long period of time. Many researchers have shown the effect of periodic checkups on oral health and denture hygiene of patients with meticulously planned prosthetic treatment. Every periodontal parameters showed better results in patients who were going to receive RPDs, and they should be educated and motivated to prevent periodontal diseases. The two important tools to achieve a good long-term prognosis were frequent hygiene recalls and prosthetic maintenance.

The lack of healthcare management and oral hygiene may cause the loss of abutment teeth in elderly patients. With accurately planned prosthetic treatment and adequate

maintenance of the oral and denture hygiene, the periodontal disease can be prevented.

Limitations of the study include small sample size, results which may differ in different study groups and geographical location. Future scope of the study should include multi centered study with a larger population, different geographical population including different countries and many other clinical factors such as bone density, oral conditions etc.

Conclusion

Within the limitations of the study, it can be concluded only age had significant association with factors influencing partial denture treatment. Periodontally compromised dentition was the most common reason for choosing partial dentures in both the genders above thirty years. Below thirty years of age partial dentures were chosen as an intermediate treatment before implant placement. Patients should be educated about good oral hygiene practices and periodic checkups to maintain periodontally sound teeth to enable fixed replacements.

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