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ORIGINAL ARTICLE

EVALUATION OF CLINICAL PERFORMANCE OF REMOVABLE PARTIAL DENTURES: AN INSTITUTIONAL BASED STUDY

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ABSTRACT:

Background: Facial esthetics, masticatory functions and speech are compromised by tooth loss. Removable partial dentures (RPDs) are commonly used to replace lost teeth. The demand for this type of dental treatment is increasing, owing to improved quality of life and its consequential effect on life expectancy of elderly populations, even in developing countries. Dental prostheses should support oral soft and hard tissues without any injuries. Hence; the present retrospective study was planned to assess the clinical performance of removable partial dentures in a given population. **Materials & methods:** The present study was conducted included assessment of all the patients who underwent rehabilitation by removable partial dentures from June 2010 to July 2016. Personal and demographic information (sex and age) and variables related to RPDs, such as date of delivery, academic degree of the clinician (general or resident), type of RPD used (acrylic partial denture or chrome-cobalt), Kennedy classification of edentulous ridge, and edentulous arch (upper or lower) were collected. Mean satisfaction in all the categories were calculate. All the results were analyzed by SPSS software. **Results:** Impaction of food occurred in 66 percent of the patients. Abrasion of teeth and abutment caries was observed in 41 and 44 percent of the patients. In 30 percent of the patients stability loss was present. Loss of support and loss of retention was seen in 35 and 40 percent of the patients. **Conclusion:** Patients wearing removable partial dentures are commonly subjected to offending problems.

Key words: Complications, Removable partial dentures.

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INTRODUCTION

Facial esthetics, masticatory functions and speech are compromised by tooth loss. Removable partial dentures (RPDs) are commonly used to replace lost teeth. The demand for this type of dental treatment is increasing, owing to improved quality of life and its consequential effect on life expectancy of elderly populations, even in developing countries.[1] Therefore, dental practitioners should have a sound knowledge of diagnosis and treatment using appropriate design and construction of RPDs. Maintenance should also be taught to oral health caregivers.[2] An ideal prosthetic restoration should be biocompatible in the oral environment and should enhance the facial esthetics of the patient. Properly designed and fabricated dental prostheses that satisfy physiological needs can benefit the patient for many years. Dental prostheses should support oral soft and hard tissues without any injuries.[3] Hence; the present retrospective study was planned to assess the clinical performance of removable partial dentures in a given population.

MATERIAL & METHODS

The present study was conducted in the department of the prosthodontics of the dental institute and included assessment of all the patients who underwent rehabilitation by removable partial dentures from June 2010 to July 2016. Ethical approval was obtained from the institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. Patients were enrolled and scheduled for a clinical examination. The patients' files were collected from the institutional Archives. Patients were invited to participate in this study. The patients signed consent forms before completing a clinical check-up. Personal and demographic information (sex and age) and variables related to RPDs, such as date of delivery, academic degree of the clinician (general or resident), type of RPD used (acrylic partial denture or chrome-cobalt), Kennedy classification of edentulous ridge, and edentulous arch (upper or lower) were collected. To evaluate problems associated with RPDs, previous studies have used a form covering 15 types of associated problems, developed by Phoenix et al. The patient satisfaction form used in this study was derived from a questionnaire developed by de

Siqueira et al.[4] This questionnaire assesses patient satisfaction in four categories: (1) Mastication, (2) appearance, (3) speaking, (4) level of comfort. In each part, patient satisfaction was evaluated using Likert's visual analog scale with ranking from 0 to 10, with zero representing the least satisfaction and 10 representing the highest satisfaction with their RPD. Mean satisfaction in all the four categories was calculate. All the results were analyzed by SPSS software. Chi-square test and student t test were used for the assessment of level of significance.

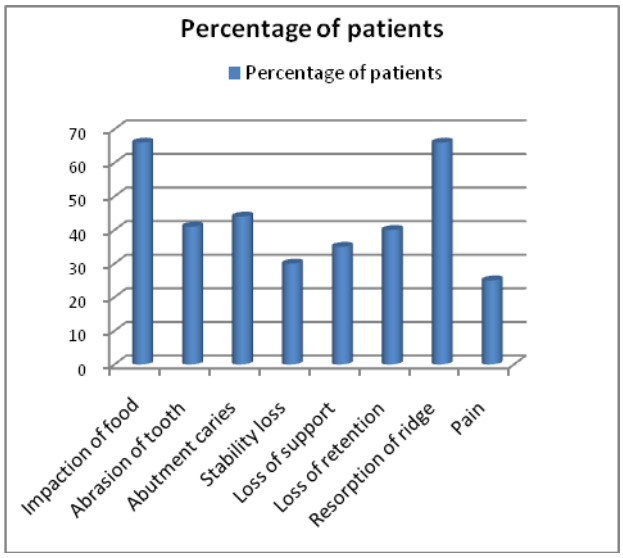
RESULTS

Table 1 shows the common problems associated with removable partial dentures. Impaction of food occurred in 66 percent of the patients. Abrasion of teeth and abutment caries was observed in 41 and 44 percent of the patients. In 30 percent of the patients stability loss was present. Loss of support and loss of retention was seen in 35 and 40 percent of the patients.

Table 1: Complications associated with removable denture

Complications	Percentage of patients
Impaction of food	66
Abrasion of tooth	41
Abutment caries	44
Stability loss	30
Loss of support	35
Loss of retention	40
Resorption of ridge	66
Pain	25

Graph 1: Complications associated with removable denture



DISCUSSION

Removable dentures are an economic and easy treatment modality for edentulous or partially edentulous patients and are still widely used.4 However, these dentures can be associated with various complications.[5] It is assumed that failures are consequences of destructive action of bad designed and manufactured dentures, since many clinicians delegate planning to technicians. Dental technicians may have a key role in the success of dentures, but it should be pointed out that they do not have adequate knowledge about biological structures and occlusion, which is needed for distribution of masticatory forces adequately. For this reason the final tooth setup is always checked clinically by dentists.[6, 7] Hence; the present retrospective study was planned to assess the clinical performance of removable partial dentures in a given population.

In the present study, we observed that food impaction and resorption of ridge were the most commonly encountered complications associated with removable partial dentures (**Table 1, Graph 1**). Bilhan et al evaluate the frequency and type of prosthetic complications in relation to type and properties of removable dentures and to investigate the influence of these complications and several data about the existing dentures on patient satisfaction. Ninety nine patients (44 males and 55 females) wearing removable dentures have been included in the study. The complications of the patients were recorded; patient satisfaction was determined with a Visual Analog Scale (VAS) and the relationship of complications and patient satisfaction with several data about the dentures such as denture age, type of denture, centric relation and vertical dimension was investigated. Kruskal Wallis, Mann Whitney U and Chi square tests were used for statistical analyses. The results were evaluated statistically at a significance level of $P<.05$. Need for addition of artificial teeth for dentures with correct centric relations was found to be significantly lower than dentures with wrong centric relations ($P<.01$). Loss of retention, ulcerations and high vertical dimension affected the VAS chewing ability scores negatively and ulcerations affected the VAS phonation scores negatively ($P<.05$). Considering the results of this study, it can be concluded that loss of retention, ulcerations and high vertical dimension caused patient dissatisfaction. Additionally, dentures with wrong centric relations caused need for addition of artificial teeth.[8- 10]

Zlatarić et al evaluated a total of 165 patients, 59 males and 105 females between 38 and 87 years. A questionnaire, devised for a purpose of the study, was divided into three parts. In the first part, patients answered questions about age, gender, marital status, education, general health, socio-economic status, self-supporting life, period of tooth loss and number of previous denture experiences and in the second part, patients graded their partial dentures, depending on the level of satisfaction, by using a scale from 1 to 5. In the third part a dentist determined Kennedy classification and their modifications, denture material and denture support, denture base shape and the number of missing teeth and graded a denture construction. Influence of these factors on patient's satisfaction was analyzed. A majority of the examined patients were satisfied with the partial prosthesis, but a small amount of dissatisfaction existed. More then half of them scored all the examined parameters to the best score category. Considering

chewing with lower partial dentures, women were more satisfied than men ($p < 0.05$). Patients with more missing teeth gave lower grades for the comfort of wearing dentures ($p < 0.05$). Patients of higher education gave lower grades ($p < 0.05$) for the aesthetics. Patients were not satisfied with speech if the dentist graded a construction of a lower partial denture low ($p < 0.05$). Dissatisfaction was related to mastication, aesthetics, number of missing teeth and ability of speech. These findings can aid a clinician in discussing a treatment plan and help a patient understand the risk of dissatisfaction in the presence of certain factors.[11- 14]

Bilhan et al assessed satisfaction, as well as the frequency and type of prosthetic complications in terms of several variables, in patients with complete dentures that had been supplied at private clinics. The study subjects were 64 patients with a mean age of 63.48 years wearing complete dentures provided at private clinics, and requesting new ones. The degree of patient satisfaction with their dentures was assessed, as well as complications and parameters related to the dentures such as the accuracy of vertical dimensions and centric relation, arrangement and possible malposition of the artificial teeth, and the border length of the denture bases. The most common complication was loss of retention (85.9%), followed by ulceration (44.2%). Mandibular dentures with long vestibular borders showed a significantly higher incidence of epulis fissuratum ($P = 0.017$), and denture-related sore spots influenced patients' speech ability ($P = 0.023$). Routine recalls seem to be important for wearers of complete dentures, as several insidious complications may develop and cause damage to the dentures as well as the patients' oral tissues.[15]

CONCLUSION

From the above results, the authors concluded that patients wearing removable partial dentures are commonly subjected to offending problems. However, future studies are recommended.

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