



EFFECT OF REMOVABLE PROSTHESIS ON PERIODONTAL HEALTH STATUS

***Dr. Momina Akram BDS, FCPS**

Assistant Professor, De'mont Morency College of Dentistry, Lahore, Pakistan.

***Corresponding Author: Dr. Momina Akram BDS, FCPS**

Assistant Professor, De'mont Morency College of Dentistry, Lahore, Pakistan.

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ABSTRACT

Removable prosthesis is the host for accumulation of plaque and bacteria which cause an increase in quality and quantity of plaque on the other teeth and this will result in an increase in periodontal problems. The population of study composed of 52 patient (32 males and 20 females), with age average from 30 to 59 years. They were separate into two groups. The Study group composed of 26 patient with age between 30 and 59 years wearing a removable prosthesis, Compared with second one (control group) composed of 26 patient with age range from 30 to 53 years not wearing a denture. Gingival index, Plaque index and probing pocket depth were calculated for entire patients. The result revealed that the patient who putting on a denture tend to have more accumulation of plaque, more inflammation of gingiva and more in destruction of periodontium than the patient not putting on a denture. It concludes that acrylic removable prosthesis tends to have a negative effect on parameters of periodontium when teeth are in communication with resin.

KEYWORDS: Partial denture, periodontal health.

INTRODUCTION

Removable partial dentures (RPD) have an important role in the health of periodontium. Glickman^[1] in 1948 reported that from periodontal viewpoint, fixed prostheses are most suitable for replacement of missing teeth, but there are certain clinical situations where RPD are the only possible way to restore the function of teeth, as is the case of Kennedy class I and II. Some patients are unable to afford treatment with implants either anatomical or economic reasons, therefore RPD can be considered a simple, noninvasive, and relatively cheap treatment option for the shortened dental arch.^[2]

One of the most popular methods since 1970 for the replacement of missing teeth was RPD, whereas many dentists consider a prosthetic rehabilitation of the second class. Also according to some studies RPD are not recommended for all patients, especially in patients where teeth mobility had movement is not >1 mm.^[3,4,5] RPD are generally attached to the abutment natural teeth by clasps or attachments that hold the denture in place.^[6] RPD in the mouth has the potential of increase plaque formation on tooth surface in contact with RPD, especially to abutment teeth, to which clasps or attachments are attached.^[7,8,9,10]

Epidemiological studies in animals and in humans have shown that dental plaque is an essential factor in the etiology of periodontitis.^[11] RPD can increase the incidence of caries; damage the periodontium, relatively

large amounts of plaque and the amount of stress on natural teeth.^[12,13,14] According to Preshaw *et al.* and Rodan *et al.*,^[15,16] RPD can increase the risk of dental plaque, gingivitis and especially root caries; however, the risk of periodontitis is not large by them.^[15] Kennedy classification, denture base shape, denture construction and especially the number of position of the clasps and occlusal rests also influence periodontal deterioration.^[17]

Therefore, the control of dental plaque is important to obtain good denture prognosis and performance for a long period. Many studies have investigated the effect of regular checkups on oral health and denture hygiene with carefully planned prosthetic treatment. All periodontal parameters appeared with better results in patients who were going to receive RPDs, and they should be motivated and instructed in order to prevent periodontal diseases.^[13,18] According to Akaltan *et al.* during 30 months study concluded that adequate oral hygiene and systemic controls can improve periodontal health of patients with RPD.^[19]

The aim of this study was to evaluate clinically the effects of removable partial denture on periodontal health status.

MATERIALS AND METHODS

We were examined the gingival index, plaque index and probing pocket depth for entire patients.

Sample collection

The participants enrolled in the study were come from the patient attending the outpatient clinic, study samples composite of 52 patients (20 females and 32 males) with age range from 30 to 59 years.

Study group: composite of 26 patient (10 females and 16 males) with age between 35 and 59 years and those patient putting on a denture for at least 3 months.

Control group also composite of 26 patient (16 males and 10 females) with age between 30 and 53 years and those patient not wearing a denture.

INCLUSION CRITERIA

- General health of participant is good without any systemic diseases.
- The patients in the study group should put on the denture for at least 3 months.

EXCLUSION CRITERIA

- Patients with medically compromised condition.
- Medicated patient.

STUDY DESIGN

The patients with removable prosthesis treatment were prepared to have all important dental treatment and restorations were finished. These involved instructions for oral hygiene, scaling and polishing and root surface cleaning of teeth with probing depth of pocket 4-7 mm under local anesthesia, and surgical root surface debridement of teeth with probing pocket depths greater than 7 mm with open flap procedures under local anesthesia. Restorative treatment involving correction of overhanging margins of restorative, restorations and endodontic treatment were also performed.

Clinical examination

The oral examination was performed on the four surfaces (lingual, buccal, distal and mesial) of all natural teeth (abutment and non-abutment teeth) with exclusion of third molars. The collected data involved: Assessment of plaque index (PLI) according to Silness and Loe, 1964.^[7]

The criteria for plaque index:

0: there is no plaque.

1: a film of plaque adhering to the free gingival margin and adjacent area of the tooth. The plaque may be diagnosed by moving a probe across the surface of the tooth.

2: moderate amount of plaque accumulation on the gingival margin and /or adjacent tooth surface and within the gingival pocket, which can be seen by naked eye clearly.

3: abundance amount of plaque within the gingival pocket and /or on the tooth surface and gingival margin.

Assessment of gingival index (GI) according to Loe 1967.^[8]

0: there is no inflammation/normal gingival

1: mild inflammation, slight change in color of gingiva, slight edema, no bleeding on probing.

2: moderate inflammation, moderate glazing, edema, redness and bleeding on probing.

3: severe inflammation, marked redness, ulceration and tendency to spontaneous bleeding.

Assessment of probing Pocket Depth (PPD) the distance from margin of gingiva to the clinical periodontal Pocket base was measured in mm. by using periodontal probe of Williams.

Score 0: those involved depth from 1-3 mm. Score 1: those involving depth from 4-5 mm.

Score 2: Those involving depth ≥ 6 mm. These clinical measurements were taken 3 - 12 months after the partial denture wearing and comparing the resulting with resulting parameter for controlled group.

RESULTS

Clinical Periodontal parameter Analysis

Plaque index (PLI): Reveals the mean value of PLI for both control and study groups. The 26 patient those putting on a denture their mean PLI 2.66 ± 0.82 comparing with 26 patients which not putting on a denture 2.01 ± 0.49 , a high significant statistical difference was observed between them with the P value (0.001).

Gingival index (GI)

The 26 patient those putting on a denture their mean GI 2.49 ± 0.16 comparing with 13 patients which not wear a denture 2.36 ± 0.12 , a non-significant statistical difference were observed between them with P value (0.47).

Probing pocket depth (PPD)

The mean value of PPD between study and control groups. The 26 patient those wearing a denture their mean PPD 0.08 ± 0.2 comparing with 26 patient which not wear a denture 0.05 ± 0.4 , a non-significant statistical difference was observed between them with P value (0.31).

DISCUSSION

The results of this study showed that there was highly significant difference in plaque index between control and study group this fact agree with Chamrawy, 1976^[9] and Suzelyet al., 2006^[10] show that increase in the formation of the plaque on teeth in contact with RPDs due to the wearing of partial dental prosthesis that lead to the periodontal disease. But not agree with Linda, et al., 2015^[11] who proved that no statistically significant difference between PI between control and patients with RPDs. Reviewed 46 RPDs and their effects on plaque accumulation. They concluded that a higher level of oral hygiene is required for RPD patients and that the denture design should be as simple as possible, covering only the essential hard and soft tissues. Similar observations were made in a 1-year study of three maxillary RPD designs.^[12] Yeunget al., 2000^[13] in their study of cobalt-chromium RPDs reported a significant increase in the prevalence of plaque bacteria, gingivitis and gingival

recession in and around the RPD abutment teeth, especially in areas within 3mm of the RPDs.³⁵ However, in other studies, patients with RPDs have reported only marginal inflammation.^[14,15] The results regard the gingival index and probing pocket depth there was non-significant difference and this coincide with result obtain by Dulaet al., 2015 since found depending on the designs, support and type of denture of RPDs with clasp or with attachment minor differences that occur on the periodontal abutment teeth. Therefore there were no significant difference, because of the small number of patients with quadrangular and one point denture support of RPD.^[16] Meanwhile these result disagree with result conducted by Augustinet al., 2016 they found there is significant differences between study and control groups regarding gingival index, they attributed the cause to poor oral care.^[17]

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