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Case Report

Effect of Faulty Prosthesis on Periodontium -A Case Report

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Abstract: Dental prosthesis can cause an increase in the accumulation of plaque bacteria that could lead to progression of periodontal disease; but if patients have effective oral hygiene maintenance and regular check-up visits, this increase in plaque bacteria could be prevented. Defective removable partial dentures (RPD's) and certain design features could lead the progression of periodontal disease. This article reports a case of faulty prosthesis affecting the periodontal health which was fabricated by the local dentist.

Keywords: removable partial denture, faulty prosthesis, periodontal health, disease progression, periodontal disease

INTRODUCTION

The dentist may be incriminated in perpetuating periodontal disease as a result of injudicious or careless dental therapy, which further aggravates the periodontal disease. This damage to the periodontal structures is called iatrogenic damage and the factors causing are called iatrogenic factors [1]. Diagnostic procedures, restorations, endodontic therapy, fixed and removable, orthodontic therapy and oral and maxillofacial surgical procedures have potential to become iatrogenic to periodontal structures if not carried out properly. There is a need to increase awareness among dental practitioners about the role of faulty prosthesis in order to get successful outcome of any dental therapy, which unfortunately is overlooked for a long time.

The mechanical reconstruction of diseased tooth structure cannot proceed safely and predictably without first bringing the gingiva to the state of health. Protecting the integrity of the crevice and attachment through every phase of restorative process is crucial. A healthy attachment apparatus is essential for the retention of the teeth and the protection of the sub-crevicular tissues from communication with the oral environment and subsequent progressive infection. The biologic union of junctional epithelium and supracrestal connective tissues with the teeth must be diligently protected because it could easily be compromised by mechanical and bacterial trauma [2].

This article documents a case of faulty prosthesis presented at department of Periodontology of dental institution.

CASE REPORT

A 43 year old healthy male patient reported to department of periodontology, out- patient department of dental institution with chief complaint of foul smell since 3-4 years, bleeding gums and food lodgment. No significant medical history was reported by the patient. Past dental history revealed trauma in lower anterior teeth two years back and splinting with cold cured acrylic resin was done by the local dentist. The design of the splint and material used for the management both were faulty (Fig.1a, 1b).

A) **B)**

Fig-1: Clinical photograph demonstrating faulty design and material used for prosthesis

After removal of faulty prosthesis, it was found that there was severely inflamed gingiva which was reddish pink in colour. Abundant amount of plaque and calculus deposits was accumulated in the region of lower anteriors (Fig.2a, 2b). Mandibular central incisors measured grade III mobility and grade II mobility was observed in mandibular lateral incisors. Radiographic interpretation showed bone loss till apical third of the central incisors, while generalized horizontal bone loss was observed in remaining dentition (Fig.3).

A) **B)**

Fig-2: Clinical photograph showing abundant plaque and calculus accumulated

Fig-3: Radiograph showing bone loss

MANAGEMENT

Removal of faulty prosthesis was followed by thorough scaling and root planing. Lower central incisors were extracted due to extensive bone loss. Four weeks post-operative photographs showed resolution of the inflammation around the remaining teeth except central incisors which were extracted. Gingiva appeared to be pink and healthy (Fig.4a, 4b).

A) **B)**

Fig-4: Clinical photograph demonstrating reduced inflammation of gingiva after Scaling and root planing and occlusal corrections after 4 weeks

Occlusal corrections were performed and replacement of missing teeth with removable partial denture was performed (Fig. 5). Patient is under follow-up for treatment of gingival recession and periodontal pockets of other teeth in maxillary and mandibular arch.

Fig-5: Clinical photograph after 3 months

DISCUSSION

Environmental and acquired risk factors (plaque bacteria, systemic conditions like diabetes mellitus, medications, pregnancy) affect the onset, rate of progression and severity of periodontal disease as well as the response to therapy [3].

It has been shown clinically and experimentally that dental restorations induce periodontal changes ranging from minor gingival alterations to pocket formation with bone loss and increased tooth mobility [1]. Heat-cured acrylics are well tolerated by the gingival tissues. In comparison, cold-curing acrylic resins may result in gingival reactions. Partial dentures favor the accumulation of plaque particularly if they cover the gingival areas. Improper designed clasps also cause damage to the abutment tooth by continuously causing excessive stress with resulting occlusal trauma. During the setting of a partial denture, the arms of the clasp may impinge upon the marginal tissue of the abutment tooth, unless the denture is supported adequately on occlusal rest. It seems that insertion of RPD creates potential for quantitative & qualitative changes of plaque formation on the remaining teeth and thereby increases risk for development of gingivitis and periodontitis [4]. RPD may also increase the incidence of dental caries and increase the amount of stress on natural teeth.

RPD's could lead to increased accumulation of plaque bacteria, which left undisturbed due to lack of oral self-care or regular periodontal maintenance, could cause progression of periodontal disease. Accurate design of the prostheses and the material used play a key role in preserving the periodontal health of patients wearing the prostheses [5]. RPD wearers should be on a periodontal maintenance schedule to avoid occurrence and further progression of periodontal disease. As Muller de van, a prosthodontist stated, our objective should be "perpetual preservation of what remains, rather than meticulous reconstruction of what is lost."

Well-constructed RPD's, with regular periodontal maintenance are not likely to pose a risk to existing periodontal health. Removable partial dentures do not cause any adverse periodontal reactions, provided that pre-prosthetic periodontal health has been established and maintained with meticulous oral hygiene.

CONCLUSION

If basic principles of RPD design are followed like rigid major connectors, simple design and proper base adaptation, periodontal health of the remaining dentition could be maintained. Improper design of prosthesis and inappropriate materials used may lead to changes in tooth mobility and increase probing depths leading to increase in plaque accumulation and further progression of periodontal disease.

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