Faulty Prosthesis and Periodontal Problem

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ABSTRACT

A Dental prosthesis can act as foci for the accumulation of plaque bacteria that might lead to the progression of periodontal disease; but if hygiene is good and visit dentist for regular check-up, this prevent the bacteria plaque accumulation. Defective fixed partial dentures (FPD’s) and certain design features could result in periodontal disease progression. This is a case report of the faulty prosthesis affecting the periodontal health which was fabricated by the local dentist.

KEYWORDS: Faulty prosthesis, Fixed partial denture, Gingival inflammation, Case report

INTRODUCTION

A complication has been defined¹ as “a secondary disease or condition developing in the course of a primary disease or condition. And if complication arises, it clearly signaled that clinical failure has occurred or poor substandard care may also be the reason for complication. Whenever a dentist works without a sense of responsibility it leads to many periodontal diseases. The damage that's caused by these two practices cause damage to periodontal structures is called iatrogenic damage and the factors responsible for it are called iatrogenic factors.²

Previously reported studies had assessed the factors related to the clinical failure of the fixed partial denture. The significant risk factors were the condition and number of the abutment teeth, number of retainers and position in the arch, overall relation of maxillary mandibular relation.³ The other reasons of non-success may include loss of retention, periodontal disease, leaching of saliva due to improper cementation, and in rare cases dental caries.⁴ Treatment option preferred for replacement of missing teeth as fixed partial denture is increasing. The advantage of fixed partial denture are retention and stability along with comfort, it is considered as one of the best options to restore the proper functioning of tooth or teeth by replacing it.⁵ But the failure of restorations is matter of grave concern in dentistry.

A case of faulty prosthesis was presented at the private dental clinic, its effect on periodontium is documented in this case report.

CASE REPORT

A 45-year old healthy female patient reported to outpatient department of a private dental clinic, with chief complain of pain and mobility in upper front teeth region for 1 year, bleeding gums, foul smell food lodgment. No significant medical history was documented by the patient. Past dental history revealed both upper central incisor and right lateral incisor missing, six-unit bridge was there using right canine and left lateral incisor as the abutment. The design of the fixed partial denture and material used for the management both were faulty. Fig: -1(a) and 1(b).

When the faulty prosthesis was removed, the condition of the periodontium was compromised, gingiva was severely inflamed, reddish pink in color size 1*1 cm and tender in respect to the right upper canine with an abundant amount of calculus with pocket depth of 7 mm. Fig: -2(a,b).

Fig 1A 1 B: Clinical photograph showing faulty design fixed partial denture

Maxillary lateral incisor was grade 3 mobile and grade 2 mobility was observed in maxillary right canine. On radiographic interpretation, bone loss is seen till the apical third of the root of lateral incisor, till the middle third of the canine, while the generalized horizontal bone loss was observed in remaining dentition. Fig: 3

Management: Removal of the faulty prosthesis was followed by through scaling and root planning. Upper left lateral incisor was extracted due to extensive bone loss, surgical excision of inflamed gingiva in respect to upper right canine, root canal treatment was performed in right upper canine followed by single unit fixed partial denture. Four weeks post-operative photographs showed resolution of inflammation around the right upper canine. Gingiva appeared to be pink and healthy and non-edematous. Occlusal correction was performed, and replacement of missing teeth with removable partial denture was performed Fig:-4(a) and 3(b). The patient is under regular follow-up for treatment of esthetic correction both in the maxillary and mandibular arch.

DISCUSSION

Every restoration must be able to withstand the constant occlusal forces to which it is subjected. This is to particular significance when designing and fabricating an FPD since the forces that would normally be absorbed by missing tooth are transmitted through the pontic, connectors, and retainers. Following are the parameters of form and forces are within the control and responsibility of the operator:

- Number and area of occlusal contacts.
- Inclination and length of cusps.
- Axial contours

Factors governing abutment selection
Occlusal Anatomy: Occlusal anatomy has an indirect influence on loads transmitted. The ridges and grooves increase the sharpness and shearing action of teeth and reduce friction between the opposing surfaces by keeping the contact area to the minimum. This permits the most efficient mastication and reduces the load transmitted. Much of this force is directed at right angles to the long axis of the teeth. Properly articulated ridge bearing cusps will cut the food rapidly, with fewer strokes, with much less muscular effort, and will direct most of the closure forces perpendicularly in line with the long axis of the teeth.

Roots: This is an important assessment of abutment’ suitability from periodontal standpoint. The tooth with conical roots can be used for a short span if all other
factors are optimal. Tooth with longer root is stronger abutments than short roots. Labiolingually conical roots are stable than circular roots. Apical divergence should be greater than apical convergence. Multirooted posterior teeth which are widely separated are preferable than conical or fused root.

Crown: root ratio: This ratio is the measure of the length of tooth, occlusal to the crest of alveolar bone compared with the length of tooth embedded into the bone. A textbook of prosthodontic considers a Crown Root Ratio (CRR) for an FPD abutment of 1:2 to be ideal, but in clinical practice, this ratio is rarely observed. An optimum crown root ratio for an abutment is 2:3. The ratio of 1:1 is the minimum ratio acceptable for abutment under normal circumstances. Poor CRR can result from improper dental treatment, traumatic or pathologic changes. Mobility occurs when alveolar support is unable to counter the masticatory forces.

Periodontal Inflammation: Generally, periodontitis is a common finding in a patient seeking for prosthodontic treatment with one or more missing teeth. The aim of periodontal therapy prior to prosthodontic therapy in such patient are: to treat gingival inflammation and establish physiologic architecture, to reduce periodontal pocket depths to clinically normal sulcular depths and enough width attached gingiva should be there. Oral hygiene should be maintain to maintain a healthy periodontium. To achieve therapeutic goal, surgical procedure should be performed in sever cases. Recommended time for healing of gingiva is six to eight weeks before tooth preparation is done. Special consideration is required with furcation involved teeth.

CONCLUSION

Competent treatment depends on the careful examination of all available information, a definitive diagnosis, and a realistic treatment plan that offers a favorable prognosis. A comprehensive, sequential approach to treatment planning is essential. Planning for fixed prosthesis should not be independent of other disciplines of dentistry. When planning and treating fixed prosthesis cases, it is important that all the applicable parameters are considered. As a suggested clinical guideline for the evaluation of abutment teeth, the clinician should use the CRR, total alveolar bone support, root configuration, opposing occlusion, presence of a parafunctional habit, pulpal condition, presence of endodontic treatment, and the remaining tooth structure. Thus, this review provides an overview of the factors influencing abutment selection to facilitate long-term success of fixed dental prosthesis.

REFERENCES


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