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Original Research

Evaluation of Causes of Failures of FPDs

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ABSTRACT:
Background: The present study was conducted to assess causes of FPD failures. **Materials & Methods:** 118 patients with fixed partial denture failures of both genders were involved. Mechanical factors and biological factors of FPD failures was recorded. **Results:** common cause of mechanical failure is loss of retention in 17, bridge fracture in 14, coronal tooth fracture in 10, porcelain fracture in 14, perforation in 6 and occlusal wear in 4 cases. The common biological failures can be caries in 2, periapical pathology in 10, occlusal problem in 9, mobility of abutment in 7, sinus in 2 and food lodgement in 4 cases. The difference was significant (P< 0.05). **Conclusion:** Common cause of failure was loss of retention, bridge fracture, coronal tooth fracture, caries and periapical pathology.
Key words: Caries, FPD, Periapical pathology.

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INTRODUCTION

Rehabilitation performed with a fixed partial denture (FPD) is one of the most accepted and desired by patients. However, it is a long procedure and generates high expectations from the patient. Once the professional knows the factors that create dissatisfaction or contribute to failures, the dentist could minimize them and thus meet that all the patient's need and establish the most appropriate planning.

Restoring and replacing of teeth with FPDs represents an important treatment procedure in dental practice, mainly because of the continuing high prevalence of caries and periodontal diseases in the adult and geriatric populations.1 Failure to achieve the desired specifications of design for function and esthetics would fail the prosthesis. Most of the time, the failures are conditions that occur during or after performed fixed prosthodontics treatment procedures. Failure of the fixed prosthesis can occur in many ways. The reasons for failure may be divided into biological failures, mechanical failures, and esthetic failures. Mechanical failures are more directly under the influence of the clinician. Biological problems are less easily controlled and in some instance may be unrelated to the treatment or prosthesis.

Various causes can be mechanical failure of crowns or bridge components such as porcelain fracture, failure of solder joints, distortion, occlusal wear and perforation, lost facings. Under changes in the abutment tooth, periodontal disease, problems with the pulp, caries and fracture of the prepared natural crown or root and movement of the tooth are common. Design failures such as under-prescribed FPDs, over-prescribed FPDs are common. In inadequate clinical or laboratory technique, positive ledge, negative ledge, defect, poor shape and color and occlusal problems are among commonly seen failures. The present study was conducted to assess causes of FPD failures.

MATERIALS & METHODS

The present study was conducted on 118 patients with fixed partial denture failures of both genders. All were informed regarding the study and their consent was obtained. Ethical approval for the same was obtained from ethical clearance committee.

Data such as name, age, gender etc. was recorded. A thorough clinical examination was performed in all patients. Mechanical factors and biological factors of FPD failures was recorded. Patients were subjected to digital intraoral radiographs. The data was analyzed statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 118		
Gender	**Males**	**Females**
Number	60	58

Table I shows that out of 118 patients, males were 60 and females were 58.

Table II Distribution of mechanical failure

Mechanical failure	Number	P value
Loss of retention	17	0.025
Bridge fracture	14	
Coronal tooth fracture	10	
Porcelain fracture	14	
Perforation	6	
Occlusal wear	4	
Total	65	

Table II, graph I shows that common cause of mechanical failure is loss of retention in 17, bridge fracture in 14, coronal tooth fracture in 10, porcelain fracture in 14, perforation in 6 and occlusal wear in 4 cases. The difference was significant (P< 0.05).

Graph I Distribution of mechanical failure

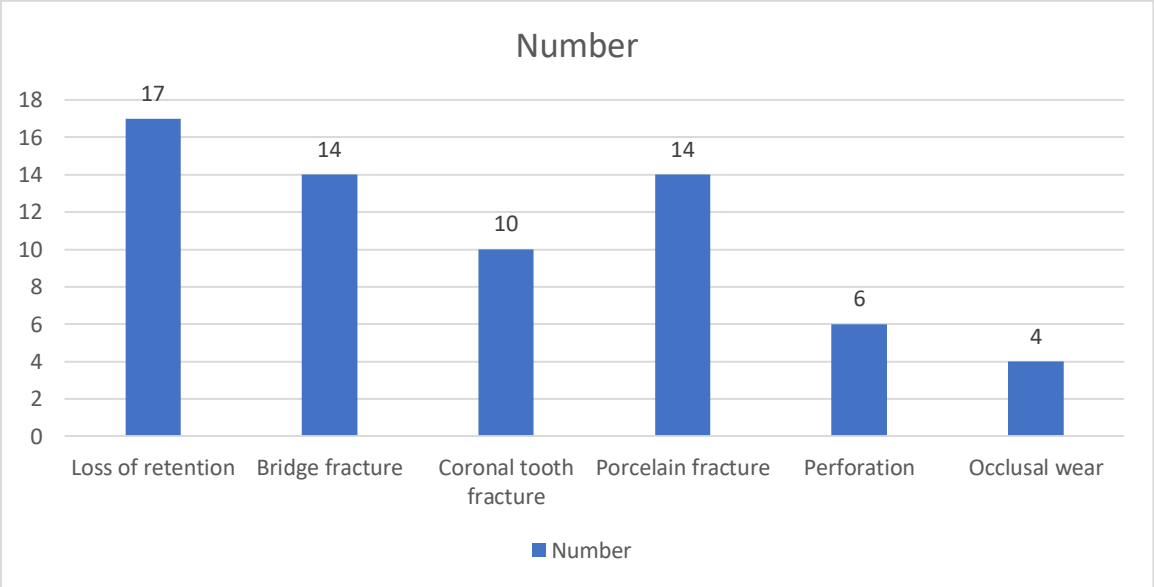
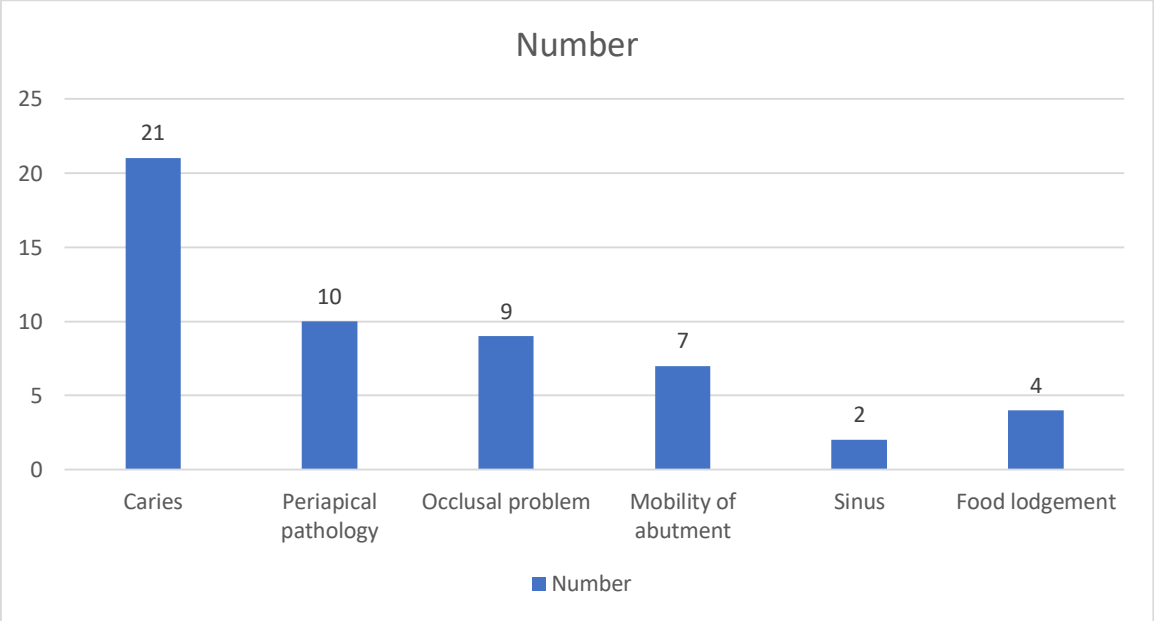


Table III Distribution of biological failure

Biological failure	Number	P value
Caries	21	0.01
Periapical pathology	10	
Occlusal problem	9	
Mobility of abutment	7	
Sinus	2	
Food lodgement	4	
Total	53	

Table III, graph II shows that common biological failures can be caries in 2, periapical pathology in 10, occlusal problem in 9, mobility of abutment in 7, sinus in 2 and food lodgement in 4 cases. The difference was significant (P< 0.05).

Graph II Distribution of biological failure



DISCUSSION

A Fixed dental prosthesis is considered as one of the best methods to restore missing or endodontic ally treated teeth, the prevalence of failures of such prosthesis were increased with its increased demand. Inspire of careful planning, scrupulous attention to the details and the application of a great deal of time and effort, the most annoying and undermining side of dental practice face up to and deal with the non-fulfilment of the work.

The success of rehabilitation treatment could be evaluated by patient satisfaction and comfort and the longevity of the prosthesis. Some factors that determine treatment satisfaction are: Comfort, function, and esthetics. These factors are strongly linked to the professional expertise, fees, professional/ patient relationship, and the prostheses quality. The quality of prostheses is related to immediate failures due to a shortage of criteria in the stages of prostheses manufacturing, such as errors in color and form selection, phonetic changes, or even food impaction, as well as late failures related to biological factors such as caries, periodontal disease, and endodontic complications or technical failures, such as loss of retention, cracks and subsequent fractures, loss of the coating material, metal framework fracture, spot weld, abutment tooth, and marginal defects. The present study was conducted to assess causes of FPD failures.

In present study, out of 118 patients, males were 60 and females were 58. We found that common cause of mechanical failure is loss of retention in 17, bridge fracture in 14, coronal tooth fracture in 10, porcelain fracture in 14, perforation in 6 and occlusal wear in 4 cases.

Chandranaik et al in their study a total of 450 fixed partial denture failures in subjects were assessed. The fixed partial denture was examined for the failure factors (biological, mechanical, and esthetic). Out of 450 fixed partial denture failures, 33.3% of it showed the biological failure, 55.1% showed the mechanical failure and 11.5% showed esthetic failure. The most frequent reason for failure was mechanical factors followed by biological and esthetic failure factors. Conclusion: The caries was the most common biological failure factor, the loss of retention was the most common cause of mechanical failure factor and

the unacceptable color match was accounted more when compared to other esthetic failure factors.

We found that common biological failures can be caries in 2, periapical pathology in 10, occlusal problem in 9, mobility of abutment in 7, sinus in 2 and food lodgement in 4 cases.

Valderhaug et al in their study a total of 30 patients were included. A total of six patients had failures out of 30 patients examined. In same patients who had clinical failures, they also had failures in the radiographic examination. About 20% of patients examined had failures in FPD after 6 months of insertion. Altogether, five clinical failures were observed and the most common was dental caries in two cases (6.6%), followed by gingival recession in one case (3.3%), the presence of pocket (3.3%), and one case of cementation failure (3.3%). Radiographic examination showed that from the total number evaluated, five patients (16.6%) had some kind of failure.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that common cause of mechanical failure was loss of retention, bridge fracture, coronal tooth fracture and common biological failures were caries and periapical pathology.

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