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Original Research

Evaluation of Complications Associated with Fixed Partial Denture- An observational study

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ABSTRACT:
Background: Fixed prosthodontic treatment involves the replacement and restoration of teeth by artificial substitutes that are not readily removable from the mouth.Hence; the present study was undertaken for evaluating the complications Associated with Fixed Partial Denture (FPD). **Materials & methods:** 133 patients consecutive who underwent prosthetic rehabilitation of missing mandibular first molar by a three unit FPD involving mandibular second premolar and mandibular second molar were enrolled in the present study. In all the patients, follow-up was done upto a time period of 2 years and occurrence of any complication in relation to the FPD was recorded.FPD was removed in all those patients in whom complication and failure occurred. After removal of FPD, the evaluation of type of pontic design and condition of abutment was done. Material used for FPD was also recorded. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. **Results:** Overall, complications occurred in relation to FPD in 17 patients. Therefore; the overall incidence of complication was 12.78 percent. Caries of the abutment was the most common reason for failure of FPD, found to be present in 8 patients. Peri-apical pathology was the reason for the failure of 6 cases of FPD. Other reasons for failure of FPD were pain/discomfort, periodontal pathology and fracture of abutment. **CONCLUSION:** FPD is a significantly effective line of treatment for rehabilitating patients with missing teeth. However; its prognosis is largely dependent upon the periodontal and clinical status of the adjacent teeth.
Key words: Failure, Fixed partial denture, Prosthetic rehabilitation.

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INTRODUCTION

Fixed prosthodontic treatment involves the replacement and restoration of teeth by artificial substitutes that are not readily removable from the mouth. Its focus is to restore function, esthetics and comfort. Conventional crowns and bridgeworks make up a major element of general and prosthodontic dental practice, especially in developing countries.[1, 2]

Knowledge regarding the clinical complications that can occur in fixed prosthodontics enhances the clinician's ability to complete a thorough diagnosis, develop the most appropriate treatment plan, communicate realistic expectations to patients, and plan the time intervals needed for post-treatment care.[3- 5]

Most of the time, complications are conditions that occur during or after an appropriately performed fixed prosthodontic treatment procedures. There are three main types of failures Biologic failure, mechanical failure and aesthetic failure.[6, 7]Hence; the present study was undertaken for evaluating the complications Associated with Fixed Partial Denture (FPD).

MATERIALS & METHODS

The present research included assessment of complications associated with fixed partial dentures. 133 consecutive patients who underwent prosthetic rehabilitation of missing mandibular first molar by a three unit FPD involving mandibular second premolar and mandibular second molar were involved in study.

Ethical approval was obtained from the institutional ethical committee before the starting of the study and written consent was obtained after explaining in detail the entire research protocol.

A self-framed questionnaire was made for obtaining the complete demographic and clinical details of all the patients. In all the patients, follow-up was done upto a time period of 2 years and occurrence of any complication in relation to the FPD was recorded. FPD was removed in all those patients in whom complication and failure occurred. After removal of FPD, the evaluation of type of pontic design and condition of abutment was done. Material used for FPD was also recorded. Site of the prosthesis and its condition was evaluated.

STATISTICAL ANALYSIS:

All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi- square test and Univariate regression curve was used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

RESULTS

In the present study, a total of 133 consecutive patients who underwent prosthetic rehabilitation of missing mandibular first molar by a three unit FPD involving mandibular second premolar and mandibular second molar were enrolled. Mean age of the patients of the present study was 32.8 years. 51.13 percent of the patients belonged to the age group of 25 to 35 years. 33.84 percent of the patients belonged to the age group of less than 25 years. 62.41 percent of the patients of the present study were males while the remaining 37.59 percent of the patients were females. In the present study, overall, complications occurred in relation to FPD in 17 patients. Therefore; the overall incidence of complication was 12.78 percent. Caries of the abutment was the most common reason for failure of FPD, found to be present in 8 patients. Peri-apical pathology was the reason for the failure of 6 cases of FPD. Other reasons for failure of FPD were pain/discomfort, periodontal pathology and fracture of abutment. Significant results were obtained while assessing the incidence of individual reason for failure of FPD.

Table 1: Age-wise and gender-wise distribution of patients

Parameter		Number of patients	Percentage of patients
Age group (years)	Less than 25	45	33.84
	25 to 35	68	51.13
	More than 35	20	15.03
Gender	Males	83	62.41
	Females	50	37.59

Graph 1: Overall Incidence of complications

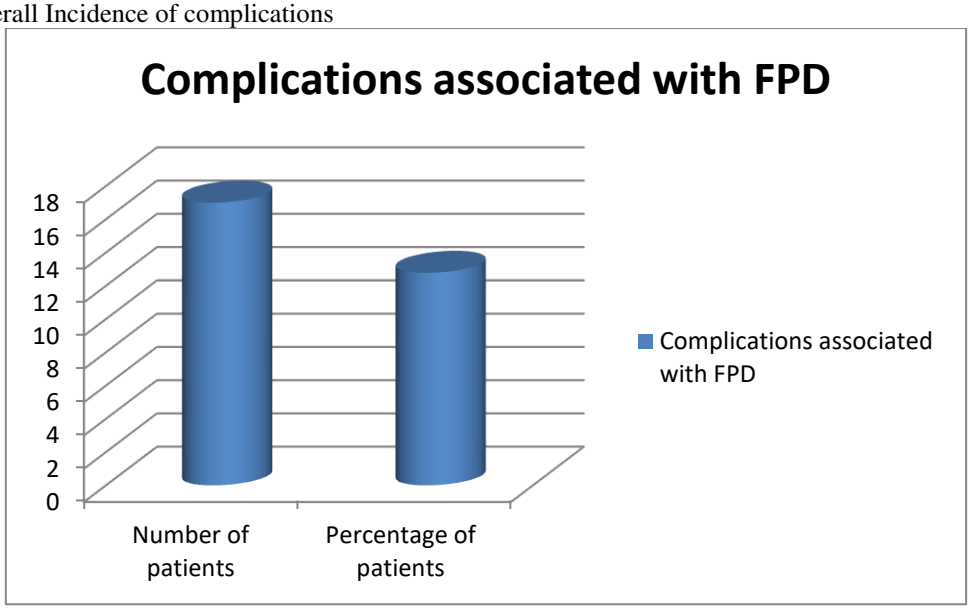
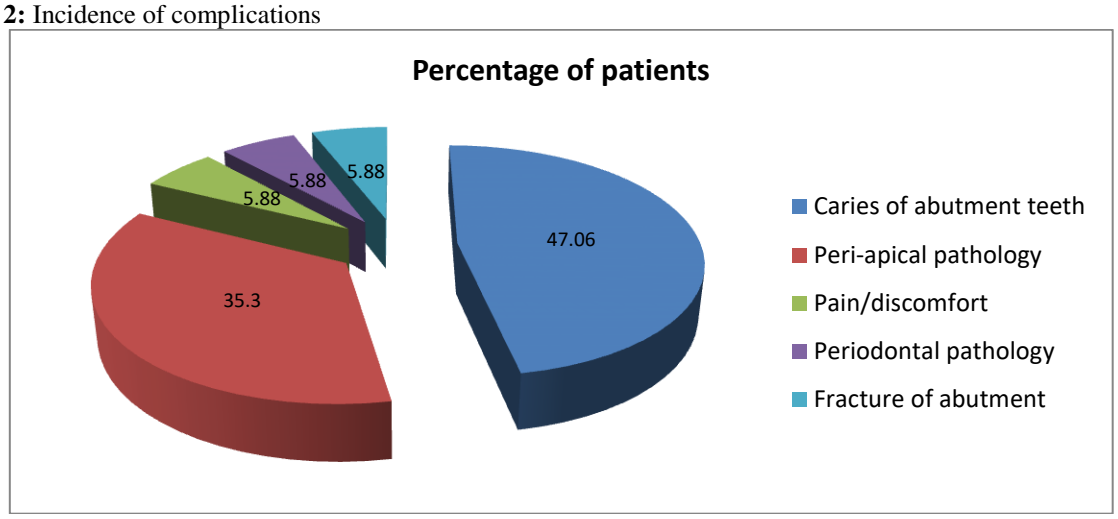


Table 2: Incidence of complications

Type of complication	Number of patients	Percentage of patients	p- value
Caries of abutment teeth	8	47.06	0.00 (Significant)
Peri-apical pathology	6	35.30	
Pain/discomfort	1	5.88	
Periodontal pathology	1	5.88	
Fracture of abutment	1	5.88	
Total	17	100	

Graph 2: Incidence of complications



DISCUSSION

FDPs replace missing teeth and are attached definitely to the remaining teeth. The restorative material may be all metal, all porcelain, a metal ceramic combination, or a metal with processed resin.[8, 9]Hence; the present study was undertaken for evaluating the complications Associated with Fixed Partial Denture (FPD).

In the present study, a total of 133 consecutive patients who underwent prosthetic rehabilitation of missing mandibular first molar by a three unit FPD involving mandibular second premolar and mandibular second molar were enrolled. Mean age of the patients of the present study was 32.8 years. 51.13 percent of the patients belonged to the age group of 25 to 35 years. 33.84 percent of the patients belonged to the age group of less than 25 years. 62.41 percent of the patients of the present study were males while the remaining 37.59 percent of the patients were females. The incidence of complications and the most common complications associated with single crowns, fixed partial dentures, all-ceramic crowns, resin-bonded prostheses, and posts and cores was assessed by Goodacre CJ et al. A Medline and an extensive hand search were performed on English-language publications covering the last 50 years. The searches focused on publications that contained clinical data regarding success/failure/complications. Within each type of prosthesis, raw data were combined from multiple studies and mean values calculated to determine what trends were noted in the studies. The lowest incidence of clinical complications was associated with all-ceramic crowns (8%). Posts and cores (10%) and conventional single crowns (11%) had comparable clinical complications incidences. Resin-bonded prostheses (26%) and conventional fixed partial dentures (27%) were found to have comparable clinical complications incidences.[11]

In the present study, overall, complications occurred in relation to FPD in 17 patients. Therefore; the overall incidence of complication was 12.78 percent. Caries of the abutment was the most common reason for failure of FPD, found to be present in 8 patients. Curtis DA et al evaluated the type and frequency of complications that may accompany the removal of definitive cemented FPDs with a single loose retainer.Participants included 22 patients with a definitive cemented FPD with complete cast crown coverage castings in which 1 retainer became loose and the other retainer remained cemented. Cemented FPD retainers were removed using 1 of 2 attachments supplied with a crown removal system (Dentco). Caries were noted on 50% of the teeth with a loose retainer. Damage resulting from attempted removal of the cemented retainer included minor porcelain fracture (9%), minor core chipping (14%), minor incisal edge chipping of tooth preparations (27%), and major damage to the abutment tooth (4%). Retrieval of an intact FPD and recementation was possible 64% of the time.[12]

In the present study, Peri-apical pathology was the reason for the failure of 6 cases of FPD. Other reasons for failure of FPD were pain/discomfort, periodontal pathology and fracture of abutment. Significant results were obtained while assessing the incidence of individual reason for failure of FPD. Sharma P analysed the complications associated with FPD. PubMed (1966-April 2004) provided the primary data source along with the bibliographies from identified articles and reviews. As there were no randomised controlled trials, English language prospective and retrospective cohort studies were selected if they had a mean follow-up of >/=5 years, included patients who were clinically examined at follow-up, reported details on suprastructures and described at least one-third of reconstructions as fixed partial dentures (FPDs).Two independent reviewers screened articles for inclusion. Disagreements were resolved by discussion and agreement determined by kappa. Three reviewers extracted data on the survival and success of the reconstructions and on biological and technical complications. Only four studies provided information on FPD success - pooled complication rate was 34.1/1000 FPD years. Considering biological complications, the estimated 10-years risk for caries at abutments was 9.5% while that for FPD loss due to caries and periodontal disease were 2.6% and 0.5%, respectively. Estimated 10-year risks for technical complications were: 6.4% for loss of retention; 2.1% for loss of FPD due to abutment fracture and 3.2% for material fractures. Estimated

success and survival rates for conventional FPDs largely confirm those of previous reviews.[13]

CONCLUSION

Under the light of above obtained results, the authors concluded that FPD is a significantly effective line of treatment for rehabilitating patients with missing teeth. However; its prognosis is largely dependent upon the periodontal and clinical status of the adjacent teeth. Therefore; we recommend further studies in future for better exploration of results.

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