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Original Article

Assessment of Complications Associated with Fixed Partial Denture- A Clinical Study

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***ABSTRACT*:**

Background: The conventional crown and fixed partial denture treatment modality being a very commonly practiced and highly successful in restoring the functions of lost or missing one or more teeth The present study was conducted to assess complications leading to fixed partial denture (FPD) failure. **Materials & Methods:** The present study was conducted on 210 patients with FPD. Site of the prosthesis and its condition was evaluated and the cause of failure was classified according to classification of "John J. Manappallil". **Results:** Out of 210 patients, males were 120 and females were 90. The difference was significant (P< 0.05). Class I had 15 males and 11 females, class II had 13 males and 4 females, class III had had 36 males and 28 females, class IV had 12 males and 10 females, class V had 19 males and 15 females and class VI had 25 males and 12 females. The difference was significant (P- 0.01). Other complications with FPD were caries of abutment teeth (12), periapical lesions (27), pain/discomfort (33), periodontal diseases (26) and abutment fracture (15). The difference was significant (P< 0.05). **Conclusion:** Fixed partial denture complications may increase the chances of failures. Most commonly seen complications were pain, discomfort, periodontal diseases and those related to the design of the FPD.

Key words: Complications, Fixed partial denture, Periodontal diseases.

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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] Although several studies had examined failure and complications associated with fixed prostheses, the conventional crown and fixed partial denture treatment modality being a very commonly practiced and highly successful in restoring the functions of lost or missing one or more teeth.[2]

The restorative material may be all metal, all porcelain, a metal-ceramic combination, or a metal with processed resin. The comfort of individual a care must be taken to avoid the common causes leading to their failures. The proper selection of the case, careful diagnosis, meticulous preparation, and a professional construction of prosthesis are mandatory to success and longevity of restoration and maintenance of health of biological investing tissues.[3]

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. Clinical failure may occur during or after fixed prosthodontic treatment procedure. Failure and complications associated with fixed prostheses include, but not limited to the loss of retention, caries, endodontic complications, periodontal disease, tooth fracture or porcelain fracture, and unsatisfactory esthetics of the prosthesis. An objective evaluation of an existing restoration is necessary before arriving to a conclusion that it is defective and requires either replacement or repair.[4] The

present study was conducted to assess complications leading to fixed partial denture (FPD) failure.

MATERIALS & METHODS

The present study was conducted in the department of Prosthodontics. It comprised of 210 patients with FPD. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study. General information such as name, age, gender etc. was noted. Type of pontic design and condition of abutment were evaluated after removal of FDP. Material used for FPD was also recorded. Site of the prosthesis and its condition was evaluated and the cause of failure was classified according to classification of "John J. Manappallil". Results thus obtained were subjected to statistical analysis using chi- square test. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 210		
Males	**Females**	**P value**
120	90	0.01

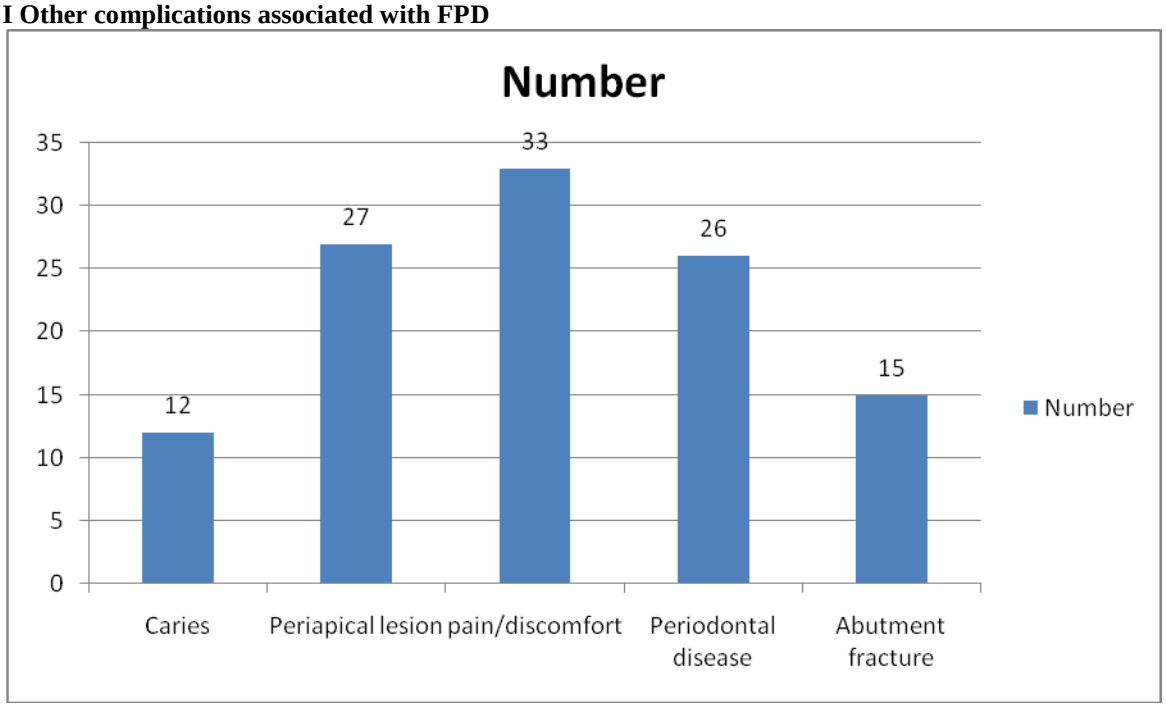
Table I shows that out of 210 patients, males were 120 and females were 90. The difference was significant (P< 0.05).

Table II Distribution of patients according to Manappallil classification

Class	Males	Females	P value
I	15	11	0.01
II	13	4	
III	36	28	
IV	12	10	
V	19	15	
VI	25	22	
Total	120	90	

Table II shows that class I had 15 males and 11 females, class II had 13 males and 4 females, class III had had 36 males and 28 females, class IV had 12 males and 10 females, class V had 19 males and 15 females and class VI had 25 males and 12 females. The difference was significant (P- 0.01).

Graph I Other complications associated with FPD



Graph I shows that other complications with FPD were caries of abutment teeth (12), periapical lesions (27), pain/discomfort (33), periodontal diseases (26) and abutment fracture (15). The difference was significant (P< 0.05).

DISCUSSION

Fixed Dental Prostheses (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. Scurria et al[5]. estimated the survival rates of fixed prostheses to be 92% and 75% at 10 and 15 years, respectively when failure was defined as fixed prostheses removal.

In present study, out of 210 patients, males were 120 and females were 90. We followed classification of complications of FPD given by Mannapalil.[6]

John J. Manappallil's classification

Class	Description
Class 1	Cause of failure is correctable without replacing restoration.
Class 2	Cause of failure is correctable without replacing restoration; however, supporting tooth structure or foundation requires repair or reconstruction.
Class 3	Failure requiring restoration replacement only. Supporting tooth structure and/or foundation acceptable.
Class 4	Failure requiring restoration replacement in addition to repair or reconstruction of supporting tooth structure and/or foundation.
Class 5	Severe failure with loss of supporting tooth or inability to reconstruct using original tooth support. Fixed prosthodontic replacement remains possible through use of other or additional support for redesigned restoration.
Class 6	Severe failure with loss of supporting tooth or inability to reconstruct using original tooth support. Conventional fixed prosthodontic replacement is not possible.

We found that class I had 15 males and 11 females, class II had 13 males and 4 females, class III had had 36 males and 28 females, class IV had 12 males and 10 females, class V had 19 males and 15 females and class VI had 25 males and 12 females. This is in agreement with Walton et al.[7]

Various modifications for the FPD design have been introduced. Sanitary/Hygienic pontic design should be used for mandibular molars because it allows easy cleaning, as its tissue surface remains clear of the residual ridge and permits easier plaque control by allowing gauze strips and other cleaning devices to be passed under the pontic and seesawed in a shoeshine manner, but it is the least "tooth-like" design and is therefore reserved for teeth seldom displayed during function.[8]

Sajjan et al[9] in their study, a total of 158 patients were selected with complaints related to fixed dental prosthesis (FDP). Site and condition of the prosthesis and its abutments were evaluated. Majority of failures (32.27%) were found to be class III failure followed by class VI failure (24.05 %). 13.29 % failures were Class IV, 12.65 % failures were identified as class II, 12.02 % failures as class V and 5.69 % failures were categorized in class I failure.

In a study by Aiman et al[10], 75 patients contributing a total of 309 units were included. Qualities of the present fixed partial dentures were clinically and radiographically assessed. The results showed most common complication was shade mismatch 64%, over-contoured 59.9%, open margins 49.8% and caries 40.1%. The number of units and duration of service were found to influence most of the assessed complications. The prevalence of complications was high among the studied sample.

In our study, other complications with FPD were caries of abutment teeth (12), periapical lesions (27), pain/discomfort (33), periodontal diseases (26) and abutment fracture (15). This is in agreement with Ericson et al[11].

Rashedi[12] in their study included 98 patients, with 44 FPD and 54 single crowns. Patients were asked questions pertained to the period, nature of complaint, and type of materials used. Clinical examination was performed. The percentage of the failures were periodontal disease (51%), gingival bleeding (46.9%), open margins (43%), caries (41%), shade mismatch (42%), occlusal wear of the opposing tooth (20.4%) prostheses loose (13%) and porcelain or abutment fracture (12.2%). The duration of service was found to influence most of the assessed complications especially periodontal disease, shade mismatch and occlusal wear.

CONCLUSION

Fixed partial denture complications may increase the chances of failures. Most commonly seen complications were pain, discomfort, periodontal diseases and those related to the design of the FPD.

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