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Original Article

Failure Rate in Fixed Partial Denture Patients- A Clinical Study

Prasanta Kumar Swain

Assistant Professor, Department of Dentistry, VSSIMSAR, Burla, Sambalpur, Odisha Pin-768017, India.

ABSTRACT:

Background: All-ceramic fixed partial dentures (FPDs) have been routinely used in clinical dentistry. The present study was conducted to assess various causes of failures of fixed partial denture. **Materials & Methods:** The present study was conducted in the private clinical set up in the town of Sambalpur, Odisha. It comprised of 112 patients of both genders. The cause of failure was assessed. Results thus obtained were subjected to statistical analysis. **Results:** Out of 112 patients, males were 60 and females were 52. failures with FPD was pain/discomfort (14), caries of abutment teeth (10), periapical lesions (12), abutment fracture (3) and periodontal diseases (4). The different was significant ($P < 0.05$). **Conclusion:** Most commonly seen complications were pain, discomfort, periodontal diseases and caries.

Key words: Fixed partial denture, Pain, Periodontal

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Corresponding author: Dr. Prasanta Kumar Swain, Assistant Professor, Department of Dentistry, VSSIMSAR, Burla, Sambalpur, Odisha Pin-768017, India

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INTRODUCTION

Clinical follow-up studies of patients treated with artificial crowns and fixed partial dentures (FPD) (bridges) is mandatory to find out complications. Reports are extremely valuable for the overall assessment of various factors considered significant to the longevity of different restorations. All-ceramic fixed partial dentures (FPDs) have been routinely used in clinical dentistry because various all-ceramic materials have been introduced and available for a clinical use. Favorable clinical performance for all-ceramic systems, has been reported especially when they are used in the anterior region.¹

However, fractures of posterior all-ceramic FPDs occurred and have been reported as a main cause of failure for these restorations. Crowns are used to restore fractured teeth and teeth with large amalgam or composite resin restorations. They restore function and can vastly improve esthetics, while protecting the remaining tooth structure at the same time. In other words a well-designed and properly placed

fixed restoration can not only restore function but also actually improve esthetics.²

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.³ 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.⁴ The present study was conducted to assess various causes of failures of fixed partial denture.

MATERIALS & METHODS

The present study was conducted in the private clinical set up in the town of Sambalpur, Odisha. It comprised of 112 patients of both genders. All were informed regarding the

study and written consent was obtained. General information such as name, age, gender etc. was recorded. The cause of failure was assessed. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 112		
Gender	Males	Females
Number	60	52

Table I shows that out of 112 patients, males were 60 and females were 52.

Table II Failure of fixed partial denture

Failures	Number	P value
Pain/discomfort	14	0.05
Periapical lesions	12	
Caries	10	
Abutment fracture	3	
Periodontal diseases	4	

Table II shows that failures with FPD was pain/discomfort (14), caries of abutment teeth (10), periapical lesions (12), abutment fracture (3) and periodontal diseases (4). The different was significant (P< 0.05).

DISCUSSION

Ceramics are brittle materials. Because of their brittleness, a catastrophic fracture can occur without or with minimal plastic deformation when they are subjected to a critical tensile load. This behavior has made ceramics a unique group among other materials. The fracture resistance of ceramics is normally represented by their fracture strength and fracture toughness. Because fracture strength depends on several factors such as testing types and conditions, material's size and shape etc. It is difficult to use this parameter for comparing the results between different studies or materials. Therefore, fracture toughness is more practical because it is an inherent material property and should not be changed with the different testing conditions and environments.⁵ The present study was conducted to assess various causes of failures of fixed partial denture.

We found that out of 112 patients, males were 60 and females were 52. 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. Tan et al⁶ 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, failures with FPD was pain/discomfort (14), caries of abutment teeth (10), periapical lesions (12), abutment fracture (3) and periodontal diseases (4). In a study by Fayyad et al⁷, 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.

The critical problem that has been observed in most studies is fracture or chipping of a veneering material. Fracture of veneering ceramics or dental porcelains could be separated into two groups, fracture of a veneering itself and fracture originated from the interfaces between the core and veneering porcelains. Most veneering ceramics or dental porcelains have low fracture toughness.

Ericson et al⁸ contend the lifespan of a FPD is correlated with the number of retainers but not with the number of units. This study found a decrease in the mean years of service as the number of units in a FPDs increased. The mean year of service for a three-unit FPD was 8.6 years and just 4.2 years for a six-unit FPD.

CONCLUSION

Most commonly seen complications were pain, discomfort, periodontal diseases and caries.

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