

Clinical Evaluation of Failure Rate of Crown and Fixed Partial Denture in Tripoli Central Dental

Amina Elsalhin¹*, Kamel Elhatab² and Sireen Meheshi³

¹Department of Fixed and Removable Prosthesis; ²Fixed Prosthodontic Division, ³Department of Prosthodontic Faculty of Dentistry and Oral Surgery, University of Tripoli- Libya

Received 16 January 2015/Accepted 12 March 2015

ABSTRACT

The aim of this denture study was to document the failure rate and length of service of crown and fixed partial bridge (FPD) in Tripoli Central Dental Clinic- Libya. Also the number of retainers, pontics, and the types of restoration were recorded. By examining 78 patients with 306 crown and bridge unites from the Tripoli Central Dental Clinic and collecting data related to the bridge area the data collated were subjected to descriptive analysis. The result of the study revealed that the pain was the most frequent complication observed on 36% of all the patients while aesthetic was the lowest with less than 2% of the patients.

Keywords- Crown; Bridge; Bridge failure.

INTRODUCTION

The use of crown and bridgework to restore a patient's dentition is a treatment carried out by practitioners on a regular basis. Despite advances in the materials and technologies used to construct such restorations, and with the cements used to retain them, failure and the need to replace crowns and bridges occurs. Failure in restorative dentistry can often be traced to the treatment planning stage and of course much can be written about treatment planning and its various phases. It could be useful however, to summarize the key elements of treatment planning as determining patient's expectations and ensuring the health of the soft tissues before treating the hard tissues.

Many examples of failure in crown and bridge work can be cited where the cause has been poor periodontal support or an unhealthy pulp. There is a repeated quote by De Van in 1956 who wrote 'We should seek to preserve what remains rather than replace what is lost.'

This concept is similar to the principle that in treatment we should do no harm. There must therefore be a positive indication for replacing a missing tooth or teeth by a fixed restoration in order to make the potential risk, expense etc. worthwhile.

From this point the idea of this study came as the concern were in the patients who may have complications after construction of FPD. Tripoli Central Dental Clinic (TCDC) was chosen for this study to be conducted out as it represents the main dental centre in Tripoli.

The aim of this trial was to document the failure rate and length of service of crown and fixed partial bridge (PDF) in Tripoli Central Dental Clinic. Also the number of retainers, pontics, and the types of restoration were recorded

By examining 78 patients with 306 crown and bridge unites from the Tripoli Central dental Clinic and collecting data related to the bridge area, the data collated were then subjected to descriptive analysis.

MATERIALS AND METHODS

The study was a retrospective examination study that conducted at the Central Dental Clinic. Permission has been obtained from the dental committee in the TCDC prior to commencing the study. The classification of failures was similar to those reported by Schwartz *et al.*⁶, and Walton *et al.*⁷ to allow for comparison with previous study. A restoration that required repair or replacement was considered a failure. A failure due to periodontal disease would exhibit soft tissue pathosis, alveolar bone loss, cervical pocket formation, and excessive mobility.

The subjects in the study consisted of 78 patients (306) units. Of these subjects 64% (50) were female and 36% (28) were male ranging from 18-93 years old of age with female to male ratio 64:36 (Figure 1).

Patient recruitment: patients came to dental practice for routine dental problems were invited to take part in the study (Table 1). They were recruited in accordance with the study protocol.

Types of restoration were recorded and (Figure 2) illustrates the percent of the different type of prosthesis.

Table (2) displays the position of prosthesis in the patients recruited in the study with most of the cases was in upper position (77%).

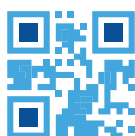
RESULTS

Data analysis

The data collected were entered to SPSS (statistical package for social science, Ink Illinois, USA) version 20.

The length service of all restoration observed in this study was 59% more than 5 years as shown in (Figure 2).

Pain was the most frequent complication, observed on 36% Of all the patients while aesthetic was the lowest with



less than 2% of the patients (Figure 3). From the bar chart it's obvious that the pain is the most frequent complication with (36%) of all the cases; followed by pain with caires

Partial Denture in Tripoli Central Dental Clinic (13%) and fracture with (9%).

The study also revealed that by examining the tissue around the abutment the pocket was recorded in about

Table 1: Demonstrate patient and units number

Column1	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Units number	78	1	13	306	3.92	2.724

Table 2: Position of prosthesis

Position of fpd	Frequency	Percentage
Upper rt	20	25.6
Upper lt	22	28.2
Lower rt	7	9.0
Lower lt	7	9.0
Upper lt and rt	18	23.1
Lower lt and rt	4	5.1
Total	77	100.0

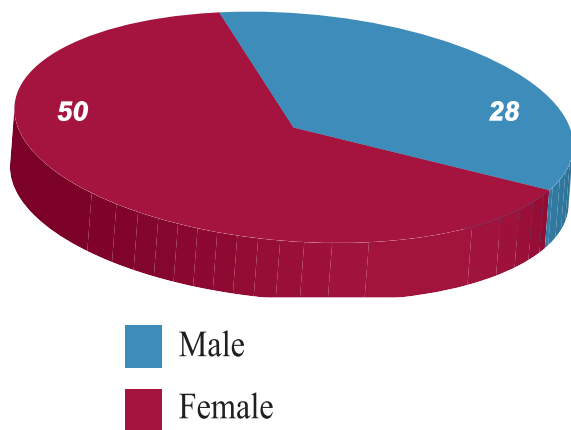


Figure 1: Male to female ratio

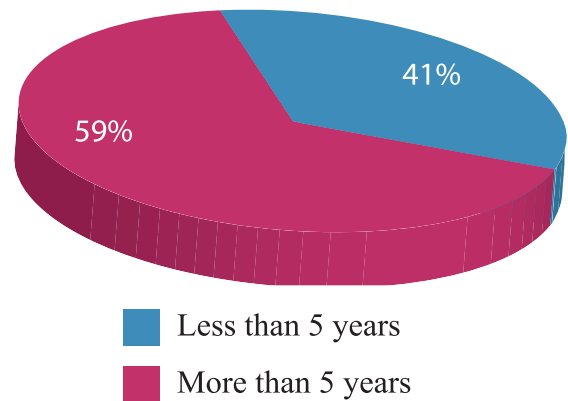


Figure 3: Length service of prosthesis

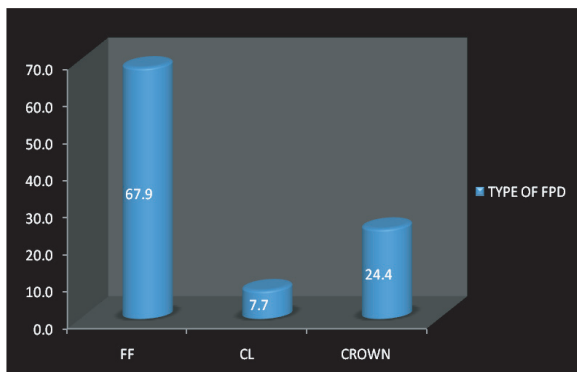


Figure 2: Type of FPD (FF fixed-fixed, CL cantilever, Crown)

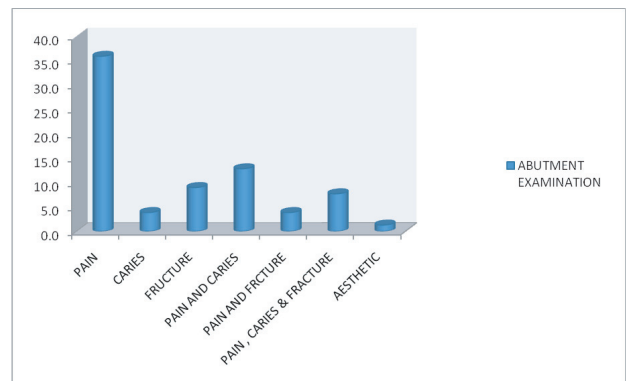
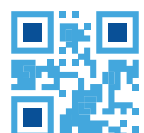


Figure 4: Demonstrate the common complication observed



55% of the patients with bleeding on probing in 89% of the patients and the recession found in 68% with inflamed tissue around the abutment in 90% of the patients (Table 1, 2, 3 and 4 respectively).

DISCUSSION

In the present study pain was the most frequent complication this finding is with disagreement with previously reported studies in western countries where dental caries was the most common finding (Walton et al. 1986)⁷, this may explained by the high percent of open and short margin (53%), (59%) respectively which could lead to sensitivity with discomfort (pain).

A previous review of the literature⁵ confirmed the view that dental restorations do not last forever; over 60% of all restorative dentistry involves the replacement of restorations. For intracoronal, direct restorations reasons for placement and replacement include primary caries, secondary caries, unacceptable marginal adaptation, and bulk fracture, fracture of the tooth, non-carious tooth substance loss and pain/sensitivity.⁴ **Table 3:** Pocket around abutment

Primary caries has been repeatedly found to be the principal reason for the placement of initial restorations, and secondary caries (as diagnosed clinically) the most common reason for the replacement of existing restorations.²

An American three-year study on 406 patients found 1320 units of crown and bridgework that were considered unserviceable.⁶ In this study, the word 'unserviceable' was used because the authors felt it was wrong to classify a crown or bridge as a failure if it had been in service for 50 or more years and had simply worn out. This study, in agreement with others^{3,7} that considered crowns and bridges collectively, concluded that secondary caries was the largest single reason for failure (37%). Oral disease in general was considered to account for 60% of the failures. Other failures were mechanical in nature. The mean life of service of single crowns was 9.4 years. Interestingly, Clinical Evaluation of Failure Rate of Crown and Fixed Partial Denture in Tripoli Central Dental Clinic

with agreement with our study aesthetics was not found to be a reason for crown replacement.

Walton et al.⁷ published a similar study on crown and bridge failures. This found 'caries' to account for 22% of failures. Overall, oral disease was found to account for 29% of failures and mechanical reasons 70%. The mean length of service for crowns and bridges in their study were eight years. Again aesthetics was not found to be a reason for failure.

Cheung¹ looked at 132 patients (out of 400 people who together had 152 crowns with a mean length of service

of 34 months. Of these crowns 14% were deemed to have failed. Technical failure was the most prevalent cause (8%), with no crowns having been found to have failed due to caries. Cheung felt that the major causes of failure differed from other studies, giving the reason for this as the fluoridation of water supplies in Hong Kong since 1961. In the present study pain found to be the most common reason for failure and according to the data collected this may provide new insights into the reasons for failure in Tripoli area.

CONCLUSION

The pain found to be the most common complaint and it is mainly because of the open margin. The importance of making a highly accurate impression with a well defined finish line as the first and most important step in creating superior crown and bridge restoration. It is hoped that the emphasis of avoiding the open and short margin will help avoid costly and time consuming of remaking or adjustment to crown and bridge prosthesis. To achieve a successful prosthesis, meticulous attention needed for every detail from initial patient interview, through the active treatment phase to planned schedule of follow-up.

Limitations of the Study

The study is limited to the patients of only on Tripoli area, namely the, Central Dental Clinic/Tripoli.

Construction of bridges (laboratory work) were not a variable.

REFERENCES

- Cheung GSP (1991) A preliminary investigation into the longevity and causes of failure of single unit extra coronal restorations, *J Dent.* **19**, 160-163.
- Deligeorgi V, Mjör IA, Wilson NHF (2001) An overview of the reasons for the placement and replacement of restorations, *Prim Dent Care.* **8**, 5-11.
- Glantz PO (1989) The clinical longevity of crown-and-bridge prosthesis. In: Anusavice KJ, editor. *Quality Evaluation of Dental Restorations. Criteria for Placement and Replacement.* Chicago: Quintessence, pp. 343-354.
- Mjör IA (1981) Placement and replacement of amalgam restorations in Italy, *Oper Dent.* **6**, 49-54.
- Sheldon T, Treasure E (1999) Dental restoration: What type of filling? *Eff Health Care* **5**, 1-12.
- Schwartz NL, Whitsett LD, Berry TG, Stewart JL (1970) Unserviceable crowns and fixed partial dentures: life-span and causes for loss of serviceability, *J Am Dent Assoc.* **81**, 1395-1401.
- Walton JN, Gardner FM, Agar JR (1986) A survey of crown and fixed partial denture failures: Length of service and reasons for replacement, *J Prosthet Dent.* **56**, 416-421.

