

Comparison of Success Rate of Fixed Partial Denture and Root Canal Treatment for the Management of Grossly Carious Teeth

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ABSTRACT

Background: This study was conducted to compare the success rate of fixed partial denture and root canal treatment for the management of grossly carious teeth.

Material and methods: This study comprised of 100 participants with grossly carious teeth. All the subjects had been informed about the procedure and were asked for consent. All the subjects gave consent for the study and had been included in the trial. The purpose of this study was to compare the success rates of fixed partial denture and root canal treatment for the management of grossly carious teeth. Hence, the subjects had been divided into 2 groups of 50 subjects each. Group 1 consisted of subjects who were planned for fixed partial denture and the 2nd group comprised of 50 subjects who underwent root canal treatment for the management of grossly carious teeth. The findings had been tabulated and statistical analysis was conducted using SPSS software.

Results: In this study, there were 50 subjects in group 1 (FPD) and 50 subjects in Group 2 (RCT). When performed RCT, infection was seen in 3 cases, Pain was seen in 2 cases and tooth fracture occurred in 1 case. Total complications were 6/50 (12%). Hence the success rate of RCT was found to be 88%. When given FPD, the complications included denture stomatitis (4/50), debonding and loss of retention (1/50 each) and caries on abutment teeth (2/50). Total complications were 8 (16%). Hence, the success rate of FPD was 84%.

Conclusion: Based on the findings of this study, it can be concluded that root canal treatment offers better success rate than fixed partial denture for the management of grossly carious teeth.

Keywords: RCT, FPD, Treatment, Caries.

1. INTRODUCTION

The primary objective of root canal treatment (RCT) is to remove inflamed and infected pulp tissue, thereby creating a conducive environment for healing and halting the advancement of periapical disease. Successful periapical healing is essential for the long-term preservation of functionally viable teeth that have undergone endodontic treatment.^{1,2}

The results of RCT are of considerable importance within the field of endodontics. It is crucial for dental practitioners to possess the necessary skills and judgment when assessing the outcomes of endodontic procedures to ascertain the success of RCT. The determination of endodontic success occurs after a root-filled tooth has been subjected to various functional stresses over time. Assessing this success necessitates the use of specific criteria.³ It is important to note that different studies have utilized overlapping criteria. The lack of consistency in defining endodontic success—ranging from the presence of a symptom-free and clinically functional tooth to stringent radiographic healing—has resulted in misdiagnoses and unwarranted re-treatment.⁴

2. MATERIAL AND METHODS

This study comprised of 100 participants with grossly carious teeth. All the subjects had been informed about the procedure and were asked for consent. All the subjects gave consent for the study and had been included in the trial. The purpose of this study was to compare the success rates of fixed partial denture and root canal treatment for the management of grossly carious teeth. Hence, the subjects had been divided into 2 groups of 50 subjects each. Group 1 consisted of subjects who were planned for fixed partial denture and the 2nd group comprised of 50 subjects who underwent root canal treatment for the management of grossly carious teeth. The findings had been tabulated and statistical analysis was conducted using SPSS software.

3. RESULTS

Table 1: Group-wise distribution of subjects

Groups	Number of subjects	Percentage
Group 1 (Fixed Partial Denture)	50	50
Group 2 (Root Canal Treatment)	50	50
Total	100	100

In this study, there were 50 subjects in group 1 (FPD) and 50 subjects in Group 2 (RCT).

Table 2: Complications of root canal treatment

Complications	Number of cases
Pain	02
Tooth fracture	01
Infection	03
Total	06

When performed RCT, infection was seen in 3 cases, Pain was seen in 2 cases and tooth fracture occurred in 1 case. Total complications were 6/50 (12%). Hence the success rate of RCT was found to be 88%.

Table 3: Complications of FPD

Complications	Number of cases
Caries on abutment teeth	02
Debonding	01
Loss of retention	01
Denture stomatitis	04
Total	08

When given FPD, the complications included denture stomatitis (4/50), debonding and loss of retention (1/50 each) and caries on abutment teeth (2/50). Total complications were 8 (16%). Hence, the success rate of FPD was 84%.

4. DISCUSSION

Fixed partial dentures (FPD) are the most prevalent solution for replacing lost teeth. To fully comprehend the complications associated with FPDs, it is essential to conduct clinical studies with follow-up assessments. The most commonly utilized types of FPDs are all-ceramic and metal-ceramic options. These materials are favored not only for their aesthetic appeal but also for their ability to withstand occlusal forces. Research indicates that patients generally accept these FPDs well, and they tend to have a longer lifespan compared to veneers.^{5,6}

FPDs can effectively address both severely decayed teeth and the replacement of missing teeth. However, like any prosthetic device, they are not without complications. Failures associated with FPDs are typically categorized into aesthetic,

mechanical, and biological failures. These issues may arise either at the time of prosthesis placement or after it has been installed.⁷

In this study, there were 50 subjects in group 1 (FPD) and 50 subjects in Group 2 (RCT). When performed RCT, infection was seen in 3 cases, Pain was seen in 2 cases and tooth fracture occurred in 1 case. Total complications were 6/50 (12%). Hence the success rate of RCT was found to be 88%. When given FPD, the complications included denture stomatitis (4/50), debonding and loss of retention (1/50 each) and caries on abutment teeth (2/50). Total complications were 8 (16%). Hence, the success rate of FPD was 84%.

Dewan H et al⁸ conducted a retrospective study from the institutional record and analyzed 150 subjects. The various factors for the FPD's failure were noted and analyzed for any statistical significance. They observed a significant difference between the various factors of the failure caries, periodontitis, uneasiness, and pain. The chief cause for the failure of the FPDs was identified to be caries, periodontitis, uneasiness, and pain.

Llena C et al.⁹ The aim of this study was to assess the preoperative, intraoperative, and postoperative factors that influenced complete periapical healing in teeth that underwent primary root canal treatment (RCT), in patients treated by postgraduate students in endodontics. Factors were retrieved and compared with the periapical status during the follow-up visit. Healing was considered as the absence of clinical and radiological symptoms. Variables significantly associated by the chi-squared test were included in a logistic regression model (LRM). Preoperative factors associated with healing were: American Society of Anesthesiology (ASA) status ($p = 0.01$); the absence of preoperative pain ($p = 0.04$); positive response to pulp tests; when the RCT cause was caries, pain, abscess, or sinus tract; probing depth <4 mm; the absence of mobility; absence or <4 mm periapical lesion ($p < 0.01$). In the LRM, the factors included were: absence or <4 mm periapical lesion; probing depths <4 mm; RCT caused by caries, pain, abscess, or sinus tract; the tooth was not a bridge abutment. Postoperative factors were: teeth with direct restoration; teeth that did not act as a support for a fixed prosthetic restoration; the favorable condition of the coronal restoration ($p < 0.01$). In the LRM, only the status of the coronal restoration was included. Preoperative conditions and the adequate fit of the coronal restoration influenced the outcome of RCT.

Conclusion

Based on the findings of this study, it can be concluded that root canal treatment offers better success rate than fixed partial denture for the management of grossly carious teeth.

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