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## ORIGINAL ARTICLE



# Perceptions of rehabilitated patients with fixed partial dentures as to the temporary restoration

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## ABSTRACT

This study evaluated patients' perceptions regarding the installation of temporary fixed partial denture (TFPD). A questionnaire developed that addressed patients' perceptions about the temporary restorations, applied to patients after concluded their treatment. Responses were analyzed by descriptive statistics and contingency tables were constructed to statistically analyze the relationship between patients' perceptions of age, gender and type of prosthesis. We interviewed 28 patients (23 female; 5 male). In the results, 53.57% of the patients reported improvement in the chewing, 3.57% of the patients reported an improvement in speech, 21.43% of patients reported improvement in both aspects and another 21.43% of patients did not report functional improvements in speech and in chewing. Regarding dental pain, 89.28% did not present. In the hygienization aspect, 46.42% of the patients had difficulty, and 25% of the patients had bleeding gum. Finally, 89.28% of the patients reported that a TFPD made it possible to predict the final treatment outcome. No statistically significant difference was found when age ( $p = 0.86062$ ) and gender ( $p = 0.41225$ ) were correlated. However, the type of prosthesis influenced patients' perceptions of TFPDs ( $p = 0.01254$ ). It is concluded that TFPD is an important step in the treatment with fixed prosthesis.

## KEY WORDS

Oral health; Temporary restoration; Fixed partial denture.

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## INTRODUCTION

The process of making temporary restorations is considered an essential step in rehabilitative prosthetic treatment<sup>(1)</sup>. The teeth prepared for Fixed partial denture (FPD) generally require a temporary restoration during the laboratorial phase of final work<sup>(2)</sup>. These restorations should work as if they were the final recovering the aesthetics, phonetics, chewing, enabling the appropriate hygiene of the patient, a part of the material and the type of cementing agent. The restoration must remain in the mouth, without displacement, until the final prosthesis, protecting the pulp and periodontal health of the dental element, helping the occlusion and the stability of position, and minimizing the psychosocial discomfort for the patient<sup>(3,4)</sup>.

Temporary fixed partial denture (TFPD) must have the biological requirements of the prepared teeth, protecting to the pulp tissues of the prepared vital teeth through a seal of dentinal tubules protecting against contamination by microleakage<sup>(5)</sup>. Correctly planned restorations can correct irregular occlusal planes, provide a vertical dimension of occlusion more appropriate to the patient and promote the tooth position in the dental arcade<sup>(6)</sup>.

The TFPDs have biological functions, especially, they not affect the marginal periodontium, and some aspects must be observed in their preparation, such as the emergence profile of the restoration, respect for interdental embrasure, polishing and finishing of the restoration. The adaptation cervical part that must have close contact with the cervical margins of the prepared tooth, and there basing. It is frequently, in cases where patients have a thin periodontal profile and the preparation is subgingivally<sup>(7)</sup>. The condition of gingival tissues to promote contouring and creation of papillae, especially after surgical procedures is a primary function of the provisional. It is expected that the provisional gives a healthy periodontium for the application of the selected molding technique, allowing adequate gingival spacing and exposure of the preparation details. The collaboration of the patients is fundamental for the periodontium health, doing correctly hygiene of tissues health<sup>(8)</sup>.

The TFPDs can be a guide to final restoration, actively participating in the diagnosis and predictability to be achieved in rehabilitation. They are often the first impression that the patient receives from the final prosthesis, and must be active representatives of the result to be achieved<sup>(9)</sup>. Thus, the objective of this study was to identify the perceptions of the patients regarding the installation of provisional FPDs.

## MATERIAL AND METHOD

The project was submitted to the Ethics Committee of Research with Human Beings of the School of Dentistry of Araçatuba – UNESP (CAAA 46285115.7.0000.5420), being approved without restrictions. Patients were attended at the fixed partial denture graduation clinic. Patients were invited to participate in the research, and informed of their goals, procedures, benefits, risks, discomforts and the confidential nature of the records. Those who agreed to participate signed the Informed Consent Form. Patients underwent an oral interview, conducted by a single examiner, who requested personal data information (name, address and telephone number, age in full years, gender and marital status). Patients who had lost teeth also were included in the study and those ones in the rehabilitation treatment with fixed partial prosthesis. Patients who had extensively compromised teeth also were attended as well. Besides, this work also included treatments with cosmetic goals that aimed at improving the harmony of the smile and personal satisfaction. Patients under 18 years old were not included in the research either those who refused to respond to the questionnaire. The interview aimed at evaluating the patient's perceptions of TFPDs based on the work of Hakestam et al.<sup>10</sup> (1997) and Sondell et al.<sup>11</sup> (2002), containing questions recorded in table 1.

According to the cores (Table 1), a database was built using the software SPSS - version 20.0, enabling the obtaining of graphs and contingency tables for the crossing of patients' perceptions regarding the use of TFPDs and age, gender and type of prosthesis. The results were statistically analyzed using the chi-square test ( $\chi^2$ ) with a significance level of 5%. Each response obtained from the patient was analyzed separately, allowing to ascertain which variables were more related to positive perceptions, that is, those that had zero as a score. To cross perceptions with patients' ages, they were divided into three age groups (E1 - corresponding to patients aged between 21 and 40 years, E2 - ages between 41 and 55 and E3 - ages above 56 years). The patients were divided into two groups according to the sum of the scores obtained in each response, with a maximum of 6 points and a minimum of 0. It was established that the group with positive perceptions had a sum of 0 to 3 points and the group with perceptions negative with the sum of 4 to 6 points. Subsequently, it was verified which factors were more associated with these perceptions (age, gender and type of prosthesis)

**Table 1:** Questionnaire regarding positive and negative perceptions applied to users of TFPDs, question assignments and scores

Question	Assignment of questions	Score
1 - Did you have experienced a dental pain after cementation of the provisional?	Yes	0
	Not	1
2 - Did you experience difficulties in sanitizing the provisional restoration?	Yes	0
	Not	1
3 - Did your gums bleed where the provisional had been placed?	Yes	0
	Not	1
4 - Did you feel an improvement in chewing?	Yes	1
	Not	0
5 - Did you feel an improvement when speaking?	Yes	1
	Not	0
6 - Did you find that the provisional helped predict the outcome of the treatment?	Yes	1
	Not	0

## RESULTS

Twenty-eight patients were interviewed, 23 women (82.14%) and 5 men (17.86%). The average age of patients was 49 years (ranging from 26 to 72 years). In total, 36 FDPs were performed, of which 14 were full crown restorations (38.88%), 7 were veneers (19.44%), 3 were 3-element adhesive FPD (8.34%), 4 were 3-element FDP (11.11%), 3 were more than 3-element FDP (8.34%), 1 were implant-supported crown (2.78%), and 4 partial restorations (11.11%). The distribution of the types of restorations performed can be visualized in Table 2.

**Table 2:** Types of FPD performed for interviewed patients in percentage.

Restoration Classification	n	%
Full Crown	14	38.88
Veneers	7	19.44
Adhesive fixed partial dentures: up to 3 elements	3	8.34
Fixed partial denture: up to 3 elements	4	11.11
Fixed partial denture: more than 3 elements	3	8.34
Implant-supported crown	1	2.78
Partial Restorations: inlays/onlays.	4	11.11
<b>Total</b>	<b>36</b>	<b>100</b>

As a result of the evaluation the benefits and functional improvements of the TFPDs, data on patients' perceptions regarding dental pain, difficulty in hygiene of the provisional, gingival bleeding, improvements in the chewing and spelling, and predictability of TFPD versus definitive treatment are shown in Table 3.

Tables 4 to 6 show the results regarding the intersection of patients' perceptions (positive and negative), patient age, gender, type of prosthesis, and p values found by the Chi-square test ( $\chi^2$ ).

The statistical analysis presented in Table 4 shows that there were no statistically significant differences ( $p = 0.86062$ ) between the perception of patients in different age groups. Thus, the perception of the interviewed patients was not influenced by their age.

Table 5 shows that there are no statistically significant differences between males and females regarding the degree of patient satisfaction ( $p = 0.41225$ ). Therefore, the patient's gender did not alter possible results in determining the degree of satisfaction with the prosthesis.

Finally, Table 6 presents statistically significant differences regarding patients' perceptions and type of prosthesis ( $p = 0.01254$ ), thus, the type of prosthesis changed the results regarding patients' perceptions.

**Table 3:** Patients' perceptions regarding dental pain, difficulty in hygiene of TFPD, gingival bleeding and predictability of TFPD versus definitive treatment.

Question	n	%
1 - Did you have experienced a dental pain after cementation of the provisional?	Yes	3
	No	25
2 - Did you experience difficulties in sanitizing the provisional restoration?	Yes	13
	No	15
3 - Did your gums bleed where the provisional had been placed?	Yes	7
	No	21
4 - Did you feel an improvement in chewing?	Yes	21
	No	7
5 - Did you feel an improvement when speaking?	Yes	7
	No	21
6 - Did you find that the provisional helped predict the outcome of the treatment?	Yes	25
	No	3
<b>Total (for each question)</b>	<b>28</b>	<b>100%</b>

**Table 4:** Contingency table, in absolute numbers, containing patients' perceptions of TFPDs and age in years.

Perceptions	Age			Total
	26-40 years	41-55 years	Upper 56 years	
Positive	6	8	5	19
Negative	2	4	3	9
Total	8	12	8	28

$p=0.86062$

**Table 5:** Contingency table, in absolute numbers, containing patients' perceptions of PFTs and gender.

Perceptions	Gender		
	Male	Feminine	Total
Positive	4	15	19
Negative	1	8	9
Total	5	23	28

$p=0.41225$

## DISCUSSION

This is an observational study based on the use of an interview questionnaire in which patients' perceptions of temporary fixed partial dentures (TFPDs) were obtained. The sample of patients observed was 28 patients, belonging to the treatment clinic of an educational institution. Few studies in the literature are currently devoted to investigating the influence of TFPDs on patients' perceptions. In this study, we can see from the results that patients' perceptions were not altered according to age and gender. However, when analyzing the type of restoration, it

**Table 6:** Contingency table, in absolute numbers, containing patients' perceptions of TFPDs and age in years.

Perceptions	Prosthesis type			Total
	Full crown / Veneers / Partial restoration	FPD up to 3 elements	FPD more than 3 elements	
Positive	13	4	2	19
Negative	5	3	1	9
Total	18	7	3	28

p=0,01254

was observed that this factor impacted differences between the types of prosthesis. A greater number of negative perceptions may be observed in patients with TFPDs of three or more elements. This fact may be mainly explained by the difficulty of hygiene reported by these patients.

Instructions for cleaning the TFPDs should be passed on to patients, recommending the use of tooth brushes and accessories such as interdental brushes and the use of floss assisted or not by a threaded wire<sup>(12)</sup>. The accumulation of bacterial plaque may cause inflammation of the marginal periodontium, and hamper the molding procedures. In our study, 46.42% of the patients experienced difficulties in cleaning the TFPDs. These patients had the hygiene information reinforced and it was followed up in the subsequent control sessions soon after the cementation of the definitive piece, so that the same difficulties did not occur in the finished treatment.

Gingival bleeding was present in 25% of the cases evaluated. In such cases, it is important to note that the TFPDs needs certain conditions, such as the battlements to be open, preserving the gingival papillae. The emergence profile, which is the axial contour of the prosthesis from the base of the gingival sulcus and through the gingiva, should produce a straight profile in the gingival third to facilitate oral hygiene<sup>(12)</sup>. The contact point should be a gingival-occlusive point, but should not extend to invade the gingival papilla and its axial surface, below the contact point it should be flat to facilitate the use of dental floss<sup>(12-13)</sup>. In the presence of bleeding, the factors mentioned above must be verified; however, there lining of the TFPDs associated with an adequate polishing is important, since it allows the correct adaptation of the restoration to the gingival tissue and to the preparation. The color of the moist retractor wire in hemostatic solution allows a more reliable relining to the cervical margins of the prepared tooth.

Patients seeking rehabilitation treatment with FPD expect their prosthesis to be similar as natural teeth in function and aesthetic. The TFPDs performance the definitive treatment, and gradually, makes the

patient become habitable with new teeth and gives it positive expectations, about their definitive prosthesis<sup>(14)</sup>. The desirable TFPD should provide mechanical, biological and aesthetic properties that are essential for the procedure to be successful. To achieve those purposes some important features should be considered, including the polymerization shrinkage, wear resistance, color stability and resistance of the material used<sup>(15)</sup>.

In our study we found that more than half of the treated patients (53.57%) noted better masticatory efficiency. The replacement of the missing tooth and dental crown restoration allowed comfort and function for patients. Only one patient (3.57%) reported that the prosthesis improved speech, and most of the patients who reported improvement in speech were also, associated with improved mastication. This fact mainly demand the extensive prosthetics made in previous regions, which provide better lip support and the consequent improvement in speech<sup>(16)</sup>.

The dental sensitivity of vital teeth, although present in 3 cases (10.71%), can be minimized in several ways. One of the main functions associated with temporary cement TFPDs is sealing the dentinal tubules, thereby minimizing dentin sensitivity<sup>(15)</sup>. Therefore, when cementing TFPDs, one must be careful with the adaptation of the piece and the cervical term so that there is no dissolution of the cement and consequent dentin sensitivity<sup>(18)</sup>.

Because they present aesthetic and functional requirements similar to definitive FPDs, the TFPDs are able to predict the final results of the treatment<sup>(6)</sup>. In our study, 89.28% of the patients evaluated, reported that the TFPDs made it possible to predict the final treatment outcome. The dentist must understand this phase as an opportunity to elaborate a model and to foresee the success of the definitive restoration<sup>(19)</sup>.

## CONCLUSIONS

Within the limitations of this study, we conclude that TFPD is an important sequence for rehabilitative treatments with fixed partial denture. They allow functional improvements as aesthetic and functional for the patients submitted to the treatment, helping in diagnosis, planning the predictability of the proposed treatment and establishing habits of hygiene for the patient if they become used to the presence of prostheses. The orientation on the hygiene TFPDs should be explained and shown to the patients so we can prevent periodontium inflammation, bleeding, and consequent postponement of the cementation of the final piece. The TFPDs is still for patients and dentists a way of predicting the failures of definitive treatment.

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## CONFLICTS OF INTEREST STATEMENT

The authors report no conflicts of interest related to this study.

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