

Clinical assessment of post-insertion complaints in complete dentures

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Citation of this Article: Yasmina Cheikh, Khadija EL. Assraoui, Siham Chemlali, Meriem Sebbah, Khadija Kaoun, Samira Bellemkhannate, “Clinical assessment of post-insertion complaints in complete dentures”, IJDSIR- April - 2021, Vol. – 4, Issue - 2, P. No. 224 – 233.

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Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: As part of an epidemiological study, patients have recently fitted with a complete removable dental prosthesis were interviewed to find out the most frequently reported immediate complaints, and to monitor the progress of cases after appropriate treatment.

Materials and methods: the sample included 51 patients, complete denture wearer, aged 42 to 76 years. The questionnaires were completed and followed by two prosthodontists who treated the complaints. They have

recorded complaints on the day of the insertion (D0), after 48 hours (D2), then after one week (D7).

Results: According to this study, it appears that the majority of the complaints expressed by the patients at D0 are: discomfort (46.8%) followed by nausea (31.2%) and hypersalivation (28.1%). The last-named were reduced on D2 and even disappeared on D7 (6.2%, 3.1%, and 6.2% respectively). Functional complaints appear on D2 and D7. The most common is pain (68.8% on D7), taste alterations (53.1% on D2 and 46.9% on D7), and prosthesis instability (46.9% on D2 and 43.8% on D7).

Conclusion: The prosthetic insertion is a crucial step because this is the stage when the patient judges their prosthesis. These complaints are inevitable after the insertion of the prosthesis. Their causes are mainly errors contracted during the realization of the prosthesis and the psychological behavior of the patient. Listening to and addressing these grievances fosters the creation of a real climate of trust. Moreover, they are the key to the success of the overall treatment of edentulous patients.

Keywords: Complete denture, post insertion, complaints, Nausea, Hypersalivation, Discomfort.

Introduction

The complete denture prosthetics remains the most indicated oral rehabilitation in the case of total edentulism. Its realization requires absolute rigour at all steps.

At the insertion stage, patients expect a lot from our treatments, which is manifested by psychological, physical, family or social reactions that always result in grievances [1].

Most complaints are related to more or less intense pain phenomena, concerning prosthetic instability or localized compressions, aesthetic or functional complaints, especially phonetic [2].

They appear immediately or after a short-term. These complaints are two types:

- Objective that are accompanied by tangible clinical signs.
- Subjective that is sensations without real clinical signs.

Immediate complaints are those that appear at the moment of insertion [1] and in order to identify them separately, it was necessary to carry out a study with the following objectives

- To know the immediate complaints most frequently encountered in totally edentulous patients wearing a removable total denture.

- To monitor the evolution of cases after performed treatment.

- To make recommendations and proposals to improve the management of immediate grievances.

Materials and methods

A prospective longitudinal observational study was performed and took place at the Dental Consultations and Treatments Centre in Casablanca, Morocco with 51 edentulous subjects (24 men and 27 women) who received a new complete removable prosthesis, from March 1 to July 31 during the year of 2017. Patients are free from systemic diseases or pathology of oral tissues were included in this study. To collect the necessary data, we developed an 8-page questionnaire written in French. It contains 41 questions, including socio-demographic and clinical elements: the degree of bone resorption, quantity and quality of saliva, complaints related to the new complete dental prosthesis: aesthetics, discomfort, nausea, hypersalivation, pain, prosthesis instability and phonation; taste alteration, cheek biting during chewing.

After obtaining the consent of the patients, two prosthodontists completed the questionnaire in a face-to-face interview in three steps: the day of insertion (D0), after 48 hours (D2) and after one week (D7).

During recall visits on D2 and D7, different adjustments were made.

For data input, we have used Microsoft Excel software and for statistical analysis software EPI info 7, and the Chi-square test to compare the results. The level of significance was set at $P \leq 0.05$.

Results

Out of 51 the total edentulous patients with a complete removable denture in this study, 32 (62.8%) patients presented for both appointments at D2 and D7 and 39 (76.5%) patients came for only one on D2. Their age

ranged from 42 to 76 years, with a mean age of 58 (± 7.71) years.

Aesthetics

Table 1: Distribution of patients according to aesthetics

The general appearance of the prosthesis:		D0	
	NB	%	
Yes	43	84,3	
Intermediate	6	11,8	
No	2	3,9	
Total	51	100	
Size of the teeth:			
Yes	44	86,3	
Intermediate	4	7,8	
No	3	5,9	
Total	51	100	
Shade of the teeth:			
Yes	46	90,2	
Intermediate	0	0	
No	5	9,8	
Total	51	100	

The rest of this paper will focus only on the patients who came to their appointments at D2 and D7: 32 patients.

Discomfort and encumbrance

Table 2: Distribution of Patients according to discomfort and encumbrance

Discomfort and encumbrance	D0		D2		D7	
	NB	%	NB	%	NB	%
Yes	15	46,8	8	25	2	6,2
Intermediate	6	18,8	9	8,1	5	15,6
No	11	34,4	15	46,9	25	78,1
Total	32	100	32	100	32	100

The difference has been statistically very significant
 $P=0.0015 \leq 0.05$

The pain

The results have shown that on D0 only 7 (21.9%) patients presented pain, while on the next day there were 24 (75%) patients. This number decreased by (68.8%) on D7.

Comparison of these values has shown a statistically non-significant difference $P=0.3292$

Localization of inflammation/ulcerations in the maxilla

Table 3: Patient distribution according to the location of maxillar Inflammation/Ulceration

Localization	D2		D7	
	NB	%	NB	%
Superior labial frenulum:				
Inflammation	2	6,2	3	9,4
Ulceration	0	0	0	0
Canine region:				
Inflammation	1	3,1	2	6,2
Ulceration	0	0	0	0
Buccal frenulum :				
Inflammation	1	3,1	1	3,1
Ulceration	1	3,1	1	3,1
Tuberosities :				
Inflammation	2	6,2	2	6,2
Ulceration	0	0	0	0
Crests:				
Inflammation	0	0	1	3,1
Ulceration	0	0	0	0
Soft palate:				
Inflammation	0	0	2	6,2
Ulceration	0	0	0	0

Localization of inflammation/ulcerations in the mandible

Table 4: Patient distribution according to the location of Mandibular Inflammation/Ulceration

Localization:	D2		D7	
	NB	%	NB	%
Inferior labial frenulum :				
Inflammation	5	15,6	1	3,1
Ulceration	0	0	1	3,1
lingual frenulum :				
Inflammation	5	15,6	2	6,2
Ulceration	2	6,2	2	6,2
Pre-mylohyoid area				
Inflammation	4	12,5	2	6,2
Ulceration	1	3,1	0	0

Mylohyoid area :				
Inflammation	6	18,8	4	12,5
Ulceration	2	6,2	1	3,1
Post-hyoid area:				
Inflammation	9	28,1	9	28,1
Ulceration	1	3,1	2	6,2
Retro-molar area:				
Inflammation	10	31,2	13	40,6
Ulceration	0	0	0	0

Distribution of patients according to the nausea reflex: The results obtained has demonstrated a decrease in the nausea reflex between D0 (10 patients, 31.2%), D2 (9 patients, 28.1%) and D7 (only one patient, 3.1%). There was a very statistically significant difference in the decrease in nausea over time (P=0.0099). Patient Distribution depending on to hypersalivation: The results have revealed a progressive decrease in hypersalivation between D0 and D7.

Nine patients on D0 had hypersalivation (28.1%), seven patients on D2 (21.2%) and only two patients on D7 (6.2%). Comparison of these percentages has indicated a statistically non-significant difference (P=0.139). Patient distribution according to stability during functional movements

Table 5: Distribution of patients according to stability during functional movements

	D0		D2		D7	
	%	NB	%	NB	%	NB
In the maxilla:						
Yes	29	90,6	31	96,9	31	96,9
No	3	9,4	1	3,1	1	3,1
Total	32	100	32	100	32	100
In the Mandible:						
Yes	19	59,4	17	53,1	18	56,2
No	13	40,6	15	46,9	14	43,8
Total	32	100	32	100	32	100

Distribution of patients according to phonetic disorders

Table 6: Distribution of patients according to phonetic disorders

Phonetic disorders	D2		D7	
	NB	%	NB	%
Yes	12	37,4	6	18,8
Intermediate	6	18,8	4	12,4
No	14	43,8	22	68,8
Total	32	100	32	100

The difference was statistically insignificant $p=0.123$

Patient distribution according to taste alteration

Treatment of the collected results has shown that 20 (62.5%) on D2 and 16 (50%) on D7 patients had a taste alteration. The comparison of these percentages indicated a statistically non-significant difference $P=0.4282$

Patient distribution according to cheek biting during chewing

Table 7: Patient distribution according to cheek biting during mastication

Cheek biting	D2		D7	
	NB	%	NB	%
Yes	4	12,5	3	9,4
No	28	87,5	29	90,6
Total	32	100	32	100

Discussion

The study was conducted on 51 patients with a predominance of the age group between 51-60 years (43.1%).

Aesthetics

In the present study, on D0, 84.31% of the patients were satisfied with the general aspect of their prosthesis. 90.2% with the colour and 86.27% with the size of the teeth.

Other studies carried out at Indian dental schools in 2016 [3] and 2017 [4] have shown lower percentages of patients who were satisfied with their aesthetics, 54.4% and 61.4% respectively. Aesthetic complaints are rare in complete dentures [5]. Acceptance of the esthetics of new prostheses is conditioned by the patient's involvement in the choice of the prosthetic teeth and obtaining his full

approval of the appearance at the trial stage [6,7,8]. The quality of communication between the practitioners and dental technicians is also essential to prevent aesthetic complaints (2).

Discomfort and encumbrance

In this study, the discomfort was the most frequent complaint on D0 with a percentage of 46.9%. This rate decreased significantly in the following appointments, 25% on D2 and 6.2% on D7. Goiato et al. (2012) have conducted a study on a sample of 60 patients and have concluded that more than half of the patients (60%) had discomfort at the day of insertion of the prosthesis [9].

Similarly, a study conducted on 160 patients, by Chandra et al. (2015), has shown that more than 70% of patients suffer from discomfort 24 hours after insertion of the prosthesis [10]. The patient adapts to the new prosthesis after a few hours or even days [11]. With the presence of this complaint, it is sufficient to re-evaluate the relationship between the prostheses and the para-prosthetic organs besides correcting any over-extensions. However, with correct prosthetic limits and volumes, it is necessary to explain and justify the extension of the bearing surface to the patient [5,12].

The pain

The pain is the most frequent complaint expressed by complete removable prosthesis wearers [13], even in this study, it represented the most frequent complaint on D2 (75%) and D7 (68,7%). The results have shown that ulceration/inflammation was more localized in the mandible compared to the maxilla in all the post-insertion

appointments. The results of the present study were consistent with those of Sadr et al. (2011), who researched a sample of 60 patients. According to them, the rate of patients requiring maxillary and mandibular dentures adjustments was 53.3% on D2 in the maxilla. 0% on D7, and in the mandible 96.7% on D2, and 36.7% on D7. They demonstrated that in the maxilla, the region of the Soft palate (21.6% on D2 and 0% on D7,) was the most affected. In the mandible, it was the retro-mylohyoid region (73% to D2 and 21.6% to D7). [14]

As a general rule, the base should not have rectifications until checking the occlusal relationships. If the occlusion is valid, the flanges of the base can be adjusted to remove any injuries or irritation [18, 8].

Nausea

In this study, 31.2% of patients had the gag reflex on D0, 28.1% on D2, and 3.1% on D7. According to V Singh et al. (2016), 26.6% of patients had the gag reflex on D1, 5.1% on D2, and 1.3% on D7. [3]

Another study conducted by Patel et al. (2017) on 150 subjects showed that during medical examination 22.3% of patients had a gag reflex following prosthetic insertion [4]. During the first few days, the prosthesis should not be moved, the patient should be reassured and instructed to do breathing and relaxation exercises [19, 20]. If nausea persists despite the preparation of the patient and functional checks, the prosthesis is reduced and thinned out in the reflexogenic zones [19]. In extreme cases, the palateless upper denture may be a solution to this problem despite the controversy over its use [21].

Hypersalivation

28.1% of patients had hypersalivation on D0 in this study, and then decreased to 6.2% on D7. Those results are similar to a study conducted by Goiato et al. (2012). After the insertion of the prosthesis, the rate of hypersalivation, after two months, goes down from 30% (D0) to 5%. [9]

Similarly, the study conducted by Patel et al. (2017) showed that few patients reported hypersalivation during medical examinations [4]. Landa reported that after the insertion of dentures, salivary flow is boosted, it decreases after 2 to 3 days (in the absence of any physical interference with the prostheses that may irritate). And according to him, the salivary glands will adapt to the presence of the prostheses and will return to their normal function in the days following insertion [22, 8].

Instability during movement

The results indicate that the maxillary prosthesis is more stable than the mandibular prosthesis on D0, D2 and D7.

In the mandible, 40.6% on D0, 46.9% on D2, and 43.8% on D7 patients complained about instability during movement. In both arches, this difference was statistically non-significant. These results are in line with those of a similar study conducted by Patel et al. (2017), which showed that 44% of patients suffer from instability of their mandibular prostheses [4]. V Singh et al. (2016) showed that 45.6% of patients had a fluctuate prostheses on D1, 27.8% on D2, and 17.7% on D7 [3]. The most important wish of the patient is the stability of the prosthesis. As from the moment they insert it, this is the first thing the patient will notice, whereas retention is only efficient after a few days [18, 24]. It is not recommended to rectify the base flanges, but it is crucial to check that the occlusion is correct. At this stage, some minor occlusal adjustments may be necessary [23].

Phonation disorders

In this study, 37.5% of patients had difficulties in speaking on D2 and 18.7% on D7. The results are similar to those obtained in the study carried out by V Singh et al. (2016) which noted a percentage of 38% on D2 and 16.5% on D7 [3]. Goiato et al. (2012) showed that 40% of patients had difficulties in speaking on the day of insertion [9]. It has been affirmed that prostheses can cause

phonation disorders even if they are well designed both functionally and aesthetically [25]. The aetiology of these disorders sometimes depends on errors in the vertical dimension of occlusion, which most often requires a complete re-evaluation of the prostheses, the position of the anterior teeth, or the shape of the palatal arch, whose variations in volume and the thickness of the bases can cause unpredictable results [9,19,26]. When the vertical dimension of occlusion is correct, the response to this complaint regarding the authors is to temporize. The patient adapts quickly to slight changes in teeth position, sometimes the variations in volume and thickness of the prosthetic bases require an adaptation time of about two weeks [5, 8]. According to Bertrand C, Hüe O., it is essential to wait about four weeks [19]. Besides, reading out loud exercises can quickly improve these problems [27].

Taste alteration

Taste alteration is not caused by total prosthesis [28, 29], because it does not cover the taste buds located on the tongue and palate [5]. In this study, 62.5% of patients had a taste alteration on D2, and 50% on D7, with a statistically non-significant difference. This complaint which is more subjective than objective is due to the base that covers and "hides" the palate. Taste buds are found on three kinds of papillae located throughout the surface of the tongue, even if there is a few distributions over the oral mucosa. The taste buds of the palate have a mechanical role. They induce the spreading of the sapid substance to excite a large number of receptors, increasing the taste acuity.

Nevertheless, It is significant to know that the presence of the monomer, released by the resin of the base a few days after the insertion of the prosthesis, causes an unpleasant sensation. This problem will be minimized by immersion of denture in water for 24 hours before insertion [30]. It is

also necessary here to explain to the patient that this complaint will disappear.

Cheek and tongue bites

This study has shown that 12.5% of the patients bit their tongue on D2. This percentage remains the same on D7. Similarly, 12.5% of the patients bit their cheeks at D2 and 9.4% on D7. According to Patel et al. (2017), 36.7% of patients bit their tongues and cheeks [4]. Cheek bites are due to dyspepsia or excessive cell infiltration in the cheek. They are frequent in the first few moments. However, it is crucial to reassure the edentulous patients and explain that it will decrease and disappear rapidly with the progressive elimination of these tissue changes [1]. To improve adjustment, the patient should eat soft foods first, gradually introduce hard foods, and place them in the corners of the mouth. Patients should be informed that their neuromuscular system will adapt to the new prostheses.

Methodological Consideration

The sample size related to the recall rate of 76.48% on D2 and 62.75% on D7 may be a limitation for this study. This parameter may be justified by insufficient contact information for some patients, and the disponibility of others due to geographical distance or lack of motivation to continue participating in the survey.

Conclusion

This study has evaluated immediate complaints reported by edentulous patients treated with a new conventional complete removable prosthesis, involved 51 patients, and concluded that:

- On the day of insertion, discomfort, nausea, and hypersalivation were the most common immediate complaints, followed by functional complaints in the days following insertion.
- Immediate complaints are temporary and require time for the patient to get adapted to the prosthesis.

- Patient's care doesn't end by insertion of complete dentures. The identification of the different causes of these complaints clinically, associated with a good practitioner-patient relationship, and communication with the patient, seems to be the ideal way to avoid these issues.

Data Availability: The data used to support the findings of this study are available from the corresponding author upon request.

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