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ORIGINAL

Oral injuries related to the use of removable total dental prostheses. Faculty of Stomatology of Havana 2024

Lesiones bucales relacionadas al uso de prótesis dentales totales removibles. Facultad de estomatología de la habana 2024

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ABSTRACT

Introduction: Prolonged use, poor condition of prostheses and harmful habits are risk factors for the appearance of oral lesions in patients with prostheses. Objective: To identify oral lesions in patients with removable total dental prostheses. Methods: A descriptive cross-sectional study was carried out in patients who use total dental prostheses at the Faculty of Stomatology of Havana, in the period between March 2024 and March 2025. The sample studied was made up of 32 patients. Ethical considerations were taken into account. Results: The most prevalent age group was 55-74 years old with 46.87 %. Males predominated with 56.4%. Subprosthetic stomatitis was the most frequent lesion, accounting for 46.87%. The most common risk factor was prostheses in poor condition (37.5%). Conclusions: The presence of oral lesions was identified in both sexes, with the male being the most affected. Subprosthesis stomatitis predominated, as well as prostheses in poor condition as a risk factor. More than half of the sample wears the same total dentures for more than 5 years. The lesions identified and the infrequency of sanitation of the prostheses are present in more than half of the sample.

Keywords: Oral lesions; Underprosthetic stomatitis; Removable total dentures.

RESUMEN

Introducción: El uso prolongado, el mal estado de las prótesis y los hábitos nocivos constituyen factores de riesgo para la aparición de lesiones bucales en pacientes portadores de prótesis. Objetivo: Identificar lesiones bucales en pacientes portadores de prótesis dentales totales removibles. Métodos: Se realizó un estudio descriptivo de corte transversal, en pacientes que usan prótesis dentales totales, en la Facultad de Estomatología de La Habana, en el período comprendido entre marzo de 2024 y marzo de 2025. La muestra estudiada estuvo conformada por 32 pacientes. Se tuvieron en cuenta las consideraciones éticas. Resultados: El grupo de edad que más prevaleció fue de 55-74 años con un 46,87 %. Predominó el sexo masculino con un 56,4 %. La estomatitis subprótesis fue la lesión más frecuente representando el 46,87 %. El factor de riesgo de mayor presencia fue la prótesis en mal estado para un 37,5 %. Conclusiones: Se identificó la presencia de lesiones bucales en ambos sexos, siendo el masculino el más afectado. Predominó la estomatitis subprótesis, así como la prótesis en mal estado como factor de riesgo. Más de la mitad de la muestra usa las mismas prótesis dentales totales por más de 5 años. Las lesiones identificadas y la poca frecuencia de higienización de las prótesis están presentes en más de la mitad de la muestra.

Palabras clave: Lesiones bucales; Estomatitis subprótesis; Prótesis totales removibles.

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INTRODUCTION

Prosthetic rehabilitation represents an essential part of oral health. All individuals should have an oral health condition that allows them to speak, chew, smile, and interact with others without restriction. Tooth loss, whether total or partial, implies a decrease in the stimulation of the maxillary and mandibular bones, which leads to bone loss, which becomes chronic, accumulative, and progressive, leading to a decrease in occlusal vertical dimension, alterations in the temporomandibular joint (TMJ), and with it the deterioration of the patient's oral health and aesthetics. The replacement of lost teeth with dental prostheses allows the restoration of masticatory function, phonation, and facial aesthetics, thereby preserving the patient's physiological state.(1)

Dental prostheses constitute a foreign body within the oral cavity, maintain a harmonious relationship with the contacting tissues, and create a beneficial response for the individual that allows the restoration of the main functions. They aid in rehabilitation against the loss of natural teeth; although they are part of the solution, they are also part of the problem, since the susceptibility of the tissues due to aging, combined with the patient's lifestyle, can lead to the development of alterations at the mucosal and bone level, forming lesions that range from benign to malignant and affect people's health.(2) The design, fabrication, and application of any prosthesis not only has as its basic objective to replace lost teeth and underlying tissues for better aesthetics and functioning, but also to improve the functioning of the remaining tissues in the mouth through a clear understanding of the resting and activity states of the prosthetic structure, with caution not to cause damage to said tissues.(3)

The mouth, due to its location and functions, is subjected to a great diversity of physical, chemical, and biological insults, so its tissues adapt in various ways to these situations. In the mid-20th century, discussion began on how dental prostheses produce pathological alterations.(4) Since then, the importance of the correct fabrication of these structures and the need for periodic examinations have been emphasized. The etiology of oral mucosal lesions in patients with complete dentures is very varied, but mainly it is the fact that the patient uses the same denture for 5 years or more, 24 hours a day, in addition to poor oral hygiene and the presence of harmful habits. These are considered the fundamental risk factors for the appearance of these oral lesions.(5) The placement of any type of dental prosthesis in the mouth causes inevitable variations in the oral environment, which force the tissues to react to adapt to new situations, which depends on the correct application of biomechanical principles and on the mode and capacity of each organism to react.(6)

Various studies demonstrate that approximately 70% of patients rehabilitated with dental prostheses present alterations in the oral mucosa, and only 30% are free from them. The stomatologist is increasingly aware of the importance of oral mucosa care and the prevention of paraprosthetic lesions. The patient rehabilitated with dental prostheses will not report the same satisfaction if lesions appear on the oral mucosa due to the discomfort or maladaptation they cause in the mouth, and could even lead the patient to remove them, which would be a failure of the prosthetic rehabilitation treatment.

The aforementioned motivated the authors to pose the following scientific problem: What are the most frequent oral mucosal lesions in patients wearing removable complete dentures, with 5 years or more of installation, who attended the emergency service of the Department of Stomatological Prosthodontics of the Faculty of Stomatology of Havana in the period from March 2024 to March 2025? The objective of the research was to identify oral lesions in patients wearing removable complete dentures who attended the emergency service of Stomatological Prosthodontics of the Faculty of Stomatology of Havana, in the period from March 2024 to March 2025.

METHODS

One descriptive cross-sectional study was conducted in patients using complete dentures at the Facultad de Estomatología de La Habana, in the period between March 2024 and March 2025.

Population and sample

It was composed of patients of both sexes, who attended the emergency service of the Department of Stomatological Prosthetics of the Faculty of Stomatology of Havana, who did not have any physical or mental disability that could interfere with the conduct of the research, and who expressed their consent to participate by signing the informed consent form.

The sample consisted of 32 patients who attended the Stomatological Prosthetics service of

the Faculty of Stomatology for emergency and presented oral lesions associated with the use of complete dentures.

Procedures and techniques for data collection

The study sample underwent an interview and intraoral physical examination in the dental chair, aided by diagnostic instruments and sterile gloves, with the aim of identifying acute and chronic lesions present in the oral mucosa and identifying the presence of the variables described in the operationalization of variables.

For the collection of information, the primary source of data collection was the anamnesis and oral examination of the patients. The data were recorded in a registration form designed by the authors.

METHODS

During the development of the research, empirical methods (observation, documentary analysis) and theoretical methods (historical-logical, analytical-synthetic) were used, as well as mathematical-statistical methods.

Processing and analysis techniques

Data were collected manually and then processed on a Gelect GDM laptop using the statistical program SPSS-21 for Windows. To determine whether there was statistical significance and a relationship between the described variables and acute lesions of the oral mucosa, the Chi-square test (X2) or Fisher's exact test was applied when the frequencies were less than 5. A bilateral p value <0.05 was considered statistically significant. The measure of association was determined using Spearman's Rho correlation coefficient in those that were significant; a bilateral p value <0.01 was considered significant. The results were presented in tables, and for discussion they were compared with other studies.

Ethical considerations

The study was conducted in accordance with the principles of medical ethics and the Declaration of Helsinki, which was reflected in the informed consent. The study sample was not subjected to additional risks, nor were questions asked that were harmful to morality or intimate aspects of their private life. Confidentiality of the information obtained was maintained. The use of this information was for research purposes only.

RESULTS

Table 1 shows the distribution of the sample according to age groups and presence of acute and chronic lesions of the oral mucosa. In a total of 32 patients, those with chronic lesions associated with the use of complete dentures prevailed, represented by 56.25%. The 55-74 age group was the most affected with 46.87%. The Chi-square test was applied and no significant differences were reported (p=0.3804).

Table 1. Distribution of the sample according to age groups and presence of acute and chronic lesions of the oral mucosa.

Age groups	Presence of acute oral mucosal lesions		Presence of chronic lesions		Total	
	N	%	N	%	N	%
35-54	4	12,5	6	18,75	10	31,25
55-74	8	25	7	21,87	15	46,87
75-89	2	6,25	5	15,6	7	21,87
Total	14	43,75	18	56,25	32	100

Table 2. Distribution of the sample by sex and presence of acute and chronic lesions of the oral mucosa.

Sex	Presence of acute oral mucosal lesions		Presence of chronic lesions		Total	
	N	%	N	%	N	%
Female	7	21,8	7	21,8	14	43,6
Male	7	21,8	11	34,6	18	56,4
Total	14	43,75	18	56,25	32	100

Table 2 shows the distribution of the population according to sex and the presence of acute and chronic lesions of the oral mucosa. Of the total sample of 32 patients, the male sex was the most affected by lesions, with 56.4%. The Chi-square test was applied and no significant differences were reported (p=0.4268).

Table 3 shows the distribution of the sample according to the type of oral mucosal lesion, in relation to the duration of use of complete dentures. The most frequent oral lesion was denture stomatitis at 46.87%, where 28.12% of individuals with this lesion had a duration of use greater than 5 years. In the sample, patients with a duration of use greater than 5 years predominated, representing 59.36%. The chi-square test was applied and no significant differences were reported (p=0.975).

Table 3. Distribution of the sample according to duration of prosthesis use and type of oral mucosal lesion.

Duration of prosthesis use	Presence of oral mucosal lesions									
	Fibrous marginal hyperplasia (fissured epulis))		Denture stomatitis		Neoplasms		Allergies		Total	
	N	%	N	%	N	%	N	%	N	%
Less than 5 years	1	3,12	2	6,25	-	-	1	3,12	4	12,49
5 years	5	15,62	4	12,5	-	-	-	-	9	28,12
More than 5 years	8	25	9	28,12	1	3,12	1	3,12	19	59,37
Total	14	43,74	15	46,87	1	3,12	2	6,24	32	100

Table 4. Distribution of the sample according to risk factors and the presence of acute and chronic lesions of the oral mucosa.

Presence of risk factors	Presencia de lesiones agudas		Presence of chronic lesions		Total	
	N	%	N	%	N	%
Poor oral hygiene	3	9,37	4	12,5	7	21,87
Presence of harmful habits	2	6,25	4	12,5	6	18,75
Inadequate diet	2	6,25	1	3,12	3	9,37
Prostheses in poor condition	6	18,75	8	25	14	43,75
Professional habits	1	3,12	1	3,12	2	6,24
Total	14	43,74	18	56,25	32	100

Table 4 shows the distribution of the sample according to risk factors and the presence of acute and chronic lesions of the oral mucosa, with prostheses in poor condition being the most significant risk factor at 43.75%, followed by poor oral hygiene at 21.87%. The Chi-square test was applied, and no significant differences were reported (p=0.7528).

Table 5 shows the distribution of the population according to the anatomical location area of the oral mucosa lesions and the time of prosthesis use. The hard palate prevailed as the most affected anatomical region with 37.5%, followed by 34.4% in the bottom of the vestibular sulcus; on the other hand, 56.25% use the prosthesis for more than 5 years. The Chi-square test was applied and no significant differences were reported (p= 0.091).

Table 5. Distribution of the sample according to the anatomical location of oral mucosal lesions and the duration of use of complete dentures.

Anatomical location of the lesion	Less than 5 years		5 years		More than 5 years		Total	
	N	%	N	%	N	%	N	%
Paladar duro	-	-	4	12,5	8	25	12	37,5
Reborde alveolar residual	-	-	3	9,4	4	12,5	7	21,9
Fondo del surco vestibular	1	3,12	4	12,5	6	18,8	11	34,4
Lengua	1	3,12	-	-	-	-	1	3,12
Labios	1	3,13	-	-	-	-	1	3,12
Tota	3	9,36	11	34,4	18	56,25	32	100

Table 6. Distribution of the sample according to continuity of prosthesis use in relation to sex.

Continuity of prosthesis use	Female		Male		Total	
	N	%	N	%	N	%
Solo horario diurno	1	3,12	11	34,4	12	37,5
Durante las 24 horas	11	34,4	4	12,5	15	46,8
Uso intermitente	2	6,25	3	9,4	5	15,6
Total	14	43,7	18	56,3	32	100

Table 6 shows the distribution of the population according to continuity of prosthesis use in relation to sex. In the female sex, 34.4% of the population uses the prosthesis 24 hours a day. The Chi-square test was applied and no significant differences were reported (p=0.2434).

Table 7 shows the distribution of the sample according to the presence of acute and chronic lesions of the oral mucosa and the daily frequency of prosthesis hygiene, where 84.3% of the sample cleans the prosthesis only 1 time a day; 16 patients with chronic lesions (50% of the sample) practice this hygiene frequency. The Chi-square test was applied and no significant differences were reported (p=0.3804).

Table 7. Distribution of the sample according to presence of acute and chronic lesions of the oral mucosa and daily frequency of prosthesis hygiene

Frecuencia de higiene de la prótesis	Presence of acute oral mucosal lesions		Presence of chronic oral mucosal lesions		Total	
	N	%	N	%	N	%
1 vez al día	11	34,38	16	50	27	84,3
2 o 3 veces al día	3	9,37	2	6,25	5	15,7
4 veces al día	-	-	-	-	-	-
Total	14	43,75	18	56,25	32	100

DISCUSSION

The present study showed a predominance of patients over 55 years of age in the sample, results similar to the study by Mubarak and Marín (7), who reported that the most affected age group is those over 60 years. A similar result was obtained by León-Velástegui (8) in one study conducted in Ecuador, where the most affected by oral mucosal lesions associated with the use of dental prosthesis in totally edentulous patients were those over 70 years, with 22.86%.

The male sex was the most affected by injuries, which coincides with the results obtained in Ciego de Ávila by Rodríguez (9), where the male sex predominated in 60.4% of their sample.

The distribution of lesions according to the time of prosthesis use showed that they are more frequent when used for more than 5 years. Different authors suggest that the time of use of prosthetic devices is related to trauma, since the fit and adaptation of the base to the tissues are progressively lost as a result of the resorption process itself. The relationship between oral affections and years of prosthesis use has shown that most oral lesions appear more in patients who use upper complete dentures for more than 5 years. Özkan (10) in Turkey in 2020 found that patients who used removable complete dentures for more than 5 years had a high prevalence of oral lesions (56.9%), which coincides with the present study; similar results were reported by Gutiérrez-Segura (11). In 1 study by García Alpizar (12), the greatest number of lesions was found in patients who had prostheses with less than 5 years of use, results that do not coincide with those of this study.

Among females, 34.4% of the sample uses the prosthesis 24 hours a day. According to Nápoles-González (13), the continued use of these prostheses is associated with the appearance of mucosal lesions; in their study, 81.4% of participants did not remove the prosthesis to sleep, which coincides significantly with this study. It is important to mention that among the indications for use of removable prostheses is a rest period of between 6 and 8 hours daily.

In the present study, 84.3% of the population cleans the prosthesis only 1 time a day. In 1 reviewed study by Bernal and collaborators (14), results similar to those obtained in this research were found regarding poor hygiene, where only 18.7% of prosthetic devices were adequately cleaned. In the study by Piña and Matos (15), poor oral hygiene also predominated over efficient hygiene among prosthesis wearers diagnosed with some type of oral lesion (41.25%). In contrast, for Marchena-Rodríguez (16), the hygiene factor may contribute to worsening the clinical picture, but by itself it is not decisive in the appearance of mucosal lesions. The authors consider that proper prosthesis hygiene should be performed without the use of detergent- or chlorine-based products, with common toothpastes being sufficient 3 to 4 times a day, as should be the case for the oral mucosa.

CONCLUSIONS

The presence of oral lesions was identified in both sexes, with the male sex being the most affected. Subprosthetic stomatitis was the most frequent lesion. The predominant risk factor related to the presence of oral lesions was the prosthesis in poor condition. More than half of the sample uses the same complete dentures for more than 5 years. The lesions identified and the low frequency of prosthesis hygiene were present in more than half of the studied sample.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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