ORIGINAL RESEARCH PAPER

Medical Science

A RETROSPECTIVE STUDY OF THE CLINICAL RELATIONSHIP BETWEEN THE USE OF REMOVABLE DENTURES AND THE DEVELOPMENT OF FIBROUS PROLIFERATION IN THE ORAL MUCOSA

KEY WORDS: Oral Injuries; Removable prosthesis; Dentures; Fibrous Injuries, Partial Toothless, Toothless Total

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ABSTRACT

OBJECTIVE: To evaluate the prevalence of fibrous lesions in the oral mucosa, associated with the use of removable dentures, at the Egas Moniz University Clinic between 2016 and 2019. **MATERIALS AND METHODS:** We evaluated 240 clinical histories of individuals who were rehabilitated with removable dentures who consulted the department of Oral Rehabilitation in the University Dental Clinic of IUEM, between 2016 and 2019. Subsequently, the data was submitted to a statistical analysis in the SPSS program. **RESULTS:** 111 (46.3%) individuals were diagnosed with a fibrous lesion and 129 (53.8%) had no fibrous lesion. Regarding gender and presence of injury, both variables are dependent $p < 0.001$. The most common site of appearance of these lesions was the jugal mucosa, with 39.6% of cases. Age group and lesion presence variables are independent $p = 0.766$ ($p < 0.05$). As for the type of denture and presence of lesion, these are dependent $p = 0.001$ ($p > 0.05$). The most common lesion was denture- induced fibrous hiperplasia with 106 cases (95.5%) and the second lesion was pyogenic granuloma (in involutionary phase) with 5 cases (4.5%). **CONCLUSION:** There is a direct relationship with gender and the prevalence of oral fibrous lesions, the same was true for the type of prosthesis the patient had. The age group did not influence the appearance of lesions.

INTRODUCTION

Tooth loss and improper use of a removable denture have a negative impact on the social and psychological health of the population. These conceptions are relevant in order to enable dentists to better approach these patients[1]. The placement of a denture may be the direct cause of the development of lesions in the oral cavity, since a foreign body is introduced, which in turn causes a quantitative and qualitative alteration of plaque, leading to an increase in frictional processes, compressive and inflammatory conditions in the oral cavity[2]. When this situation is associated with trauma caused by a maladjustable removable denture, sometimes causes lesions in the oral cavity[3]. However, systemic conditions may influence the oral environment and alter tissue responses. Age and gender influence the prevalence of oral lesions[4]. Age, because with aging, mucous membranes become more permeable to toxic agents and mechanical trauma[5,6]. Hyposalivation and parafunctional activity may lead to a higher risk of developing oral lesions[5,6,7,8].

Regarding gender influencing the development of oral lesions, previous studies have found controversial results. There are authors who observed a higher prevalence of oral lesions in males[9], others concluded that the prevalence of oral lesions are not significantly different between genders[10,11] and others have found that the prevalence of oral lesions is higher in females[8]. The association between poor oral hygiene and denture- related oral mucosal lesions is not well established because this association is complex. The literature suggests that mismatched dentures create additional spaces for food and limit the natural cleansing action of the tongue, lips and jugal mucosa[12].

Denture-induced lesions can be divided into acute or chronic. Acute injuries can occur mainly in the case of misadjusted new dentures and poorly distributed occlusal forces, which causes ischemia and tissue irritation in the surrounding areas, thus causing ulceration and pain. Chronic lesions result from the gradual alteration of the supporting tissue, in which case the prosthesis is usually mismatched leading to tissue alterations due to the friction exerted[13]. Diagnosis of oral mucosal lesions is often based on clinical examination and clinical history, although sometimes additional diagnostic means such as biopsy may be necessary.[14]. The most common lesions in the oral mucosa associated with the use of removable dentures are prosthetic stomatitis, angular cheilitis, traumatic ulcers, hyperplastic lesions, flaccid ridge (replacement of bone by fibrous tissue), frictional keratosis and fibroma[15,10]. These lesions tend to occur more frequently during the first 5 years of use of the removable prosthesis[16].

Fibroma is the most common lesion of volumetric enlargement of the oral cavity. It can occur anywhere in the oral cavity, but the most common location is in the mucosa, occlusion line probably caused by deleterious habits such as biting the jugal mucosa, debordant restorations or overextended prosthetic tabs, leading to overgrowth of fibroblasts and collagen resulting in a submucosa with an increased mass without evidence of pain[17]. Pyogenic granuloma is a non-neoplastic tumor growth of oral cavity or skin tissues. It is a type of inflammatory hyperplasia more frequent in the oral cavity, and at the histological level there is a proliferation of granulation tissue, with inflammatory infiltrate and large angiogenic capacity[18]. We may also have a pyogenic granuloma with a fibrous character, in its involution phase, which in turn develops in the stroma of the underlying connective tissue[19].

The etiology of this type of injury is not well understood. It is considered a reactive injury to several low-grade stimuli,

including: repeated trauma, constant friction, aggression, excessive compression, hormonal factors and some drugs[20].

Its localization involves the gum in 75% of cases. Less commonly, it appears on the lips, tongue, jugal mucosa and palate[20,18].

Patients with removable dentures should be warned about the importance of periodic examination due to constant changes in supportive tissues in order to detect early lesions[12].

No similar studies have been conducted in this region (Almada, Setúbal, Portugal)

The aim of this study was to study, through data from the clinical history of patients from Egas Moniz University Clinic accompanied in Oral Rehabilitation, the prevalence of fibrous lesions in the oral mucosa, associated with the use of removable prosthesis.

MATERIALS AND METHODS

In this investigation, data were collected by a single examiner between March and July 2019, and were analyzed by consulting the clinical files in a list containing the number of respective patient files followed in Oral Rehabilitation at 2016 and 2018. The number of cases relating to the period of interest of the study was 15670, of which 500 cases were randomly chosen. Of these 500 cases were removed from patients who came to the oral rehabilitation consultation to perform other procedures (tartarectomy, dentistry, endodontics, surgery) and who did not have removable prosthesis, whose number were 154 cases. We had a sample of 346, of which 23 were fixed prosthesis carriers and 12 implant carriers. Consequently, of the 311 clinical files, 21 had no clinical history of oral rehabilitation attached to the process, and 45 had the prosthesis for over 5 years, and 5 did not authorize the use of their data for scientific purposes, leaving the sample summarized to 240. oral rehabilitation processes.

Subsequently, the case histories were consulted, the gender, the age at which the injury occurred, the upper and lower jaw Kennedy Class, the type of upper and lower prosthesis the patient had, material from which the dentures were made, and the place of presence of removable prosthesis, that is, if only had upper / lower prosthesis or both, the adaptation of the prosthesis, if there was fibrous lesion or not, and if yes, where it occurred.

Ethical Considerations

The study was presented as the Final Proposal of the Thesis of the Integrated Master in Dentistry at the Egas Moniz University Institute (EMUI), was submitted and approved by the following responsible entities, Scientific Committee of the Integrated Master in Dentistry of EMUI, ClinicalDirectorate of Dental Medicine Egas Moniz and EMUI Ethics Committee.

STATISTICAL ANALYSIS

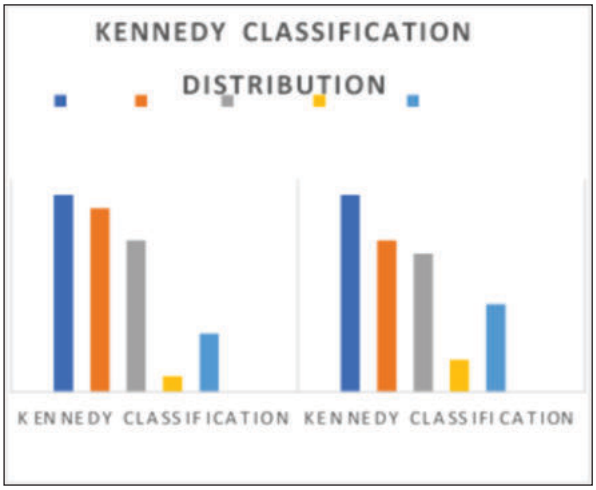
A comparative statistical analysis was performed with the Statistical Package for the Social Sciences (SPSS).

RESULTS

The study group consisted of 240 cases of patients with removable prostheses for less than or equal to 5 years, with a prevalence of 133 (55.4%) for females and 107 (44.6%) for males.

At the time, the subjects were between 32 and 90 years old, with an average age of 59.08 years (± 11.68). In order to make a characterization by age group, and to facilitate the organization of data, it was considered the division into two groups: age below 65 years and age above or equal to 65 years.

We found that there were 456 toothless jaws, and 24 patients with no absence of teeth in both jaws, they were not removable-denture wearers (Graph 1)



Graphic 1- Sample distribution according to Kennedy Classification System

Description and characterization of removable dentures

Dentures location

We obtained 12 (5%) of patients with upper jaw removable dentures, 12 (5%) of patients with lower jaw removable dentures and 216 (90%) used removable dentures in both jaws.

Dentures: type and material

In the upper jaw, we obtained 206 (90.4%) patients with partial dentures, and 22 (9.6%) with total dentures. In the lower jaw, 196 (85.6%) had partial dentures and 33 (14.4%) had total dentures.

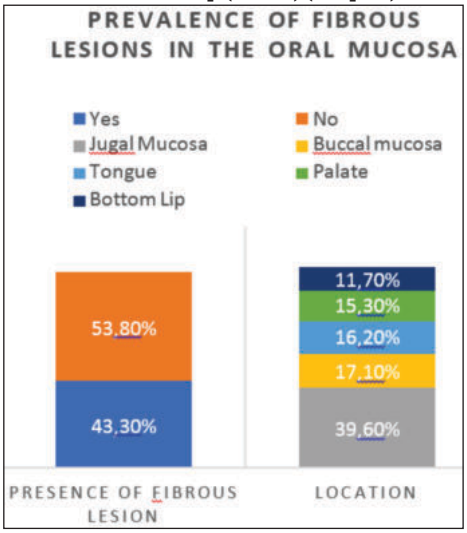
In both the upper and lower jaws, the most frequent material is acrylic resin, and the less frequent material, cobalt chromium metal.

Dentures condition

In terms of dentures adaptation, in this sample, we accounted for 95 (39.58%) mismatched prostheses, and the remaining 145 prostheses (60.42%) were adapted.

Prevalence of fibrous lesions in the oral mucosa and its location

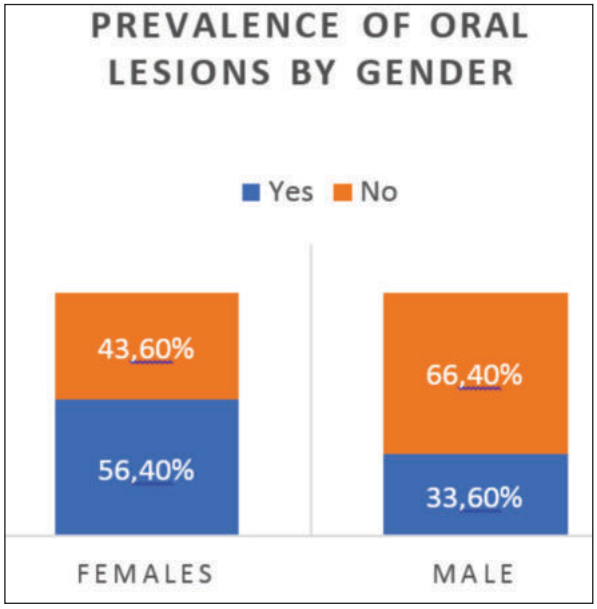
In the present study, we found 111 (46.3%) patients with some type of denture-related fibrous lesion, and 129 (53.8%) without any apparent lesion. The site of appearance of these lesions was also analyzed in the sample group containing fibrous lesions, the most common being the jugal mucosa (39.6%), the second buccal mucosa (17.1%) and the third tongue (16.2%), fourth the palate (15.3%), and the least frequent site was the lower lip (11.7%) (Graph 2).



Graphic 2-Prevalence of fibrous lesions in the oral mucosa

Prevalence of oral lesions by gender

Females had a higher percentage of oral lesions. Of the 133 women, 75 (56.4%) had a diagnosis of fibrous lesion and 58 (43.6%) had no lesion. Regarding the male gender, from the 107 clinical histories observed, 36 (33.6%) were diagnosed with fibrous lesion and 71 (66.4%) had no lesion (Graph 3). Statistical analysis confirmed that the variables evaluated are dependent, we obtained a p value <0.01, which means that the patient's gender influenced the onset of oral lesions.



Graphic 3-Prevalence of oral lesions by gender

Prevalence of oral lesions by age Group

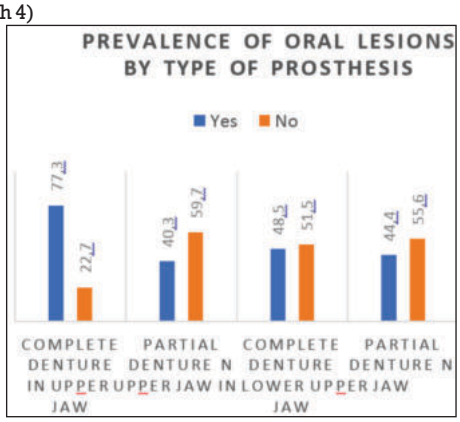
The largest number of oral lesions occurred in the age group under 65 years, in which the number of individuals with fibrous lesion was 76 (46.9%) and 86 (53.1%) without lesion. Regarding the age group older than or equal to 65 years, we observed that 35 (44.9%) had lesion and 43 (55.1%) had no lesion.

In the statistical analysis it was found that the variables are independent; p = 0.766 (p> 0.05), the age of the patients in this sample did not influence the appearance of oral lesions.

Prevalence of oral lesions by type of dentures

Correlating the types of dentures with the prevalence of oral lesions, it is possible to verify that the evaluated variables are dependent, because a value of p = 0.001 (p <0.05) was obtained, which means that the type of the upper jaw denture, partial or total, influenced the appearance of lesions in this sample.

The type of lower denture, partial or total, did not influence the appearance of lesions, since p= 0.662 (p> 0.05) was obtained (Graph 4)



Graphic 4-Prevalence of oral lesions by type of prosthesis

Prevalence of oral lesions by type of lesion

Regarding the type of lesions, fibroma was found, with a prevalence of 106 cases (95.5%), and the second lesion was pyogenic granuloma, with a fibrous composition, in 5 cases (4, 5%).

DISCUSSION

In our study, the sample n = 240 is higher than in other studies of prevalence of oral lesions associated with the use of removable prosthesis, such as a study where n = 213[21], then in another study, whose n = 77[22], further on, in a diferente study, 103 patients were analyzed[23], and in another study 62 patients with acrylic removable dentures were examined[24]. Given these studies, the present study seems to have a representative sample. Regarding the gender of the sample, as in previous studies[25], most of the individuals were female, being also observed by the same authors that this group is the one that most resorts to the Oral Rehabilitation Clinic consultations at the Dentistry Clinic of the EMUI. This is because women are more concerned about their oral health and oral aesthetics, and therefore care more about maintaining and rehabilitating their teeth[26].

The mean age of patients in our study was 59.08 years. This average age is slightly below the average obtained in other studies, 61.8 to 83.7 $_{years}$27,10,5,28

Evaluating each arch separately, in the upper jaw, there was a higher prevalence of Class I (30.8%) and the lowest, 23.8% Class IV, which is the same 29,30 In other studies, Class III was the most predominant[25,31].

When analyzing the constituent material of the dentures, the acrylic dentures were the most found, both in the maxilla (58.3%) and mandible (52.5%), which were the results presented by another author, who verified a higher prevalence of removable acrylic partial dentures, regardless of gender and age of patients[32].

In this study, the time of denture-use, used as inclusion criteria was less than or equal to 5 years. This time of prosthesis use without replacement is the time limit recommended in the literature[33,16]. The choice of inclusion criteria was also based on the teaching protocol and the follow-up given to patients in an academic context at the EMUI, where, from the fifth year of use of the dentures, patients are advised to purchase a new one. , in order to prevent future lesions and improve its adaptation. In another study[34], a prevalence of 78% of patients using the same prosthesis for more than 5 years was found.

Most of the individuals studied 129 (53.8%) did not present pathological lesions of the tissues adjacent to the partial and total removable dentures, the number of oral lesions detected was 111 (46.3%). When comparing this value of oral lesions (46.3%) with the 51%, 53% and 50% of other studies[6,35,9], respectively, it is concluded that there is a lower prevalence of lesions in the studied sample.

The largest number of oral lesions was present in the age group under 65 years[4]. We found a higherresult as other authors . As for the lower jaw, thesame was true: Class I, the most prevalent with 29,30 prevalence of oral lesions in females (56.4%), as in previous studies[5]. This fact is due to the habit of30.8%, and the least, Class IV (5%).

women wearing their dentures more often and for longer periods of time for aesthetic reasons[26]. As for men, we only obtained 33.6% of individuals with lesions, a smaller percentage compared to another study[9].

Several investigators have shown that complete dentures cause more oral lesions than removable partial dentures, which has been attributed to the larger area of oral mucosa covered by the complete denture[10]. In this study, this fact was verified, the type of dentures influenced the appearance of

lesions.

Comparing the prevalence of oral lesions by type of partial, chrome-cobalt or acrylic dentures, we found a higher number of oral lesions 64 (63.4%) in the arches rehabilitated with acrylic dentures, while in the chrome-cobalt dentures only 37 (36.6%) presented lesion. This fact is justified by several authors, because the chrome-cobalt partial dentures provides better support, stability and retention of the dentures over time, consequently causing fewer oral lesions[5,36].

In the present study, the most prevalent lesion was fibroma in 106 cases (95.5%), and the second lesion was pyogenic granuloma, with only 5 cases (4.5%), where the lesion was already it was in a state of involution, hence it had a fibrous character according to the anatomopathological report contained in the patients' respective clinical files. In another similar study, the most common lesion found was also fibroma (inflammatory fibrous hyperplasia), with 18 cases (41.9%) found in patients with removable dentures[12].

This study aimed to evaluate the prevalence of oral fibrous lesions and to evaluate if there was a higher prevalence in individuals using removable prosthesis, which was confirmed in this sample.

CONCLUSION

From this study, we can state that there is a direct relationship between the prevalence of oral fibrous lesions and the use of removable prosthesis in the sample studied. The prevalence of oral lesions differed from other studies. However, further studies are needed to analyze more individuals so that we can have conclusive results.

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