



## Original Research Article

## Evaluation and examination of oral lesions in patients treated with total removable prostheses

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DOI: 10.5281/zenodo.7110534

Submission Date: 30<sup>th</sup> Aug. 2022 | Published Date: 24<sup>th</sup> Sept. 2022\*Corresponding author: Dr. Neada Hysenaj  
University Dental Clinic, Tirana, Albania**Abstract**

**Introduction:** The biomechanical complications, risks of surgical procedures and the cost of implant-prosthetic restorations have done that the number of patients requiring total removable prosthesis remains high. The **aim** of our study was to examine and evaluate the oral lesions in patients treated with complete removable dentures. **Materials and methods:** Patients who came in the University Dental Clinic, Tirana, aged 50 to 85 years, were included in the study. Inclusion criteria were patients who had total dentures in one or both jaws. Factors such as: the time patients had been wearing dentures, gender, age, hygiene of patients were analyzed. Patients were divided into two main groups: I. Patients who had dentures for a period longer than 5 years and II. Patients who had dentures for less than 5 years. Patient's hygiene and the relationship with the presence of oral lesions were examined. **Results:** In our study the most frequent lesions were prosthetic stomatitis (42.3%), followed by traumatic ulcers (28.2%), hyperplasia (18.5%), angular cheilitis (9.6%), and resin allergy (1.2%). **Conclusions:** It is important to instruct prosthetic patients on oral and their dentures hygiene. Periodic check-ups at the dentist also play a key role in the early detection of oral lesions.

**Keywords:** Oral lesions, total dentures, frequency.**INTRODUCTION**

The oral health of edentulous patients plays an important role in relation to nutrition, social interactions, and the overall systemic health of patients. In addition to the rehabilitative function of total dentures, they constitute a potential risk factor for the presence of lesions of the oral mucosa<sup>1</sup>. Anyway the response of the organism depends on the general wellbeing and on different systemic diseases. According to Kivovics and Márton<sup>1,2</sup> hyposalivation and parafunctional activity might increase the frequency of oral lesions. Dundar reported that diabetes mellitus increases the presence of denture induced oral lesions: prosthetic stomatitis and hyperplasia.<sup>3</sup> The oral lesions might be as a result of different factors such as: bacterial or viral components, reactions from medications, systemic disorders, use of alcohol or tobacco and the presence of local factors such as partial or total dentures.<sup>18</sup>

**Purpose**

This study was performed to evaluate and analyze the prevalence of oral mucosal lesions in patients with total removable dentures.

**Materials and Methods**

298 patients who presented to the University Dental Clinic, Tirana, Albania, 50 to 85 years old were included in the study. Diagnosis was made based on medical history, clinical examination, and additional examinations. The following were analyzed: duration of prosthesis, age and gender of patients, method of cleaning, duration of prosthesis retention. Inclusive criteria were: 1. Patients with total prosthesis in one jaw. 2. Patients with total prostheses in both jaws. 3. Patients with dentures for at least 6 months. Exclusion criteria 1. Patients who require prosthodontic treatment for the

first time 2. Patients who did not agree to be part of the study. Statistical analysis: All data were collected and percentage analyzes were performed.

## Results and discussion

The prevalence of oral lesions in our study was 52,3% which is lower to the prevalence demonstrated by Gaur *et al.*<sup>4</sup>. 59.5%, but higher compared to 3.9% reported by Taiwo<sup>5</sup> *et al.*, 45.6% by Pavicic<sup>6</sup> *et al.*, 20.5% prevalence reported by Mubarak<sup>7</sup> *et al.*

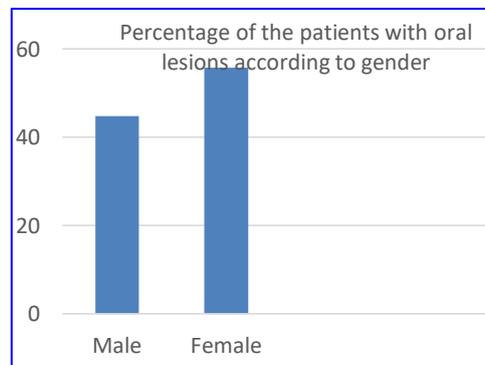
### Prosthetic stomatitis

Our study evaluated factors such as the age, gender, cleaning method, time of denture wearing. The study notes that continuous wearing of denture, low oral hygiene are risk factors for the the presence of prosthetic stomatitis. Denture age was also an important factor because of the porosities of the denture, bacteria accumulation due to the aging process. In our study, the second group, the older people had a higher frequency of oral lesions, especially prosthetic stomatitis. This is a result of the systemic diseases in combination also with the local factors.

Our study showed a slightly higher percentage of oral lesions in female patients (Tab 1.1, 1.2). This result is consistent with the study of Patil<sup>8</sup>, Shah and Ahmad<sup>9</sup> and da Silva<sup>10</sup>. The increased frequency in women is not clear, but may be related to hormonal reasons: In pre- and post-menopausal women, decreased estrogen and progesterone and atrophy of the oral mucosa cause irritation from chronic irritation caused by the use of total prostheses.

**Tab. 1.1:** The frequency of oral lesions related to gender

Lesions	Female	Male	Total
Prosthetic Stomatitis	39	27	66
Traumatic ulcer	24	21	44
Hiperplasia	15	14	29
Angular Cheilitis	8	7	15
Resin allergy	1	1	2

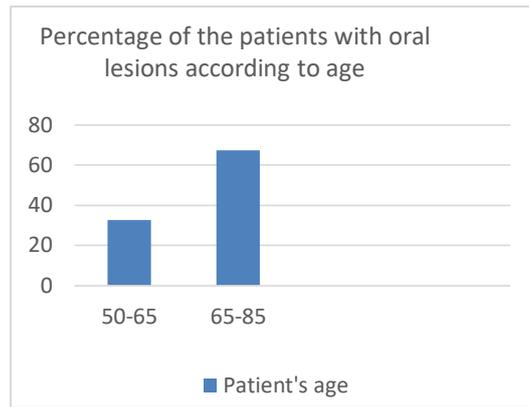


**Chart 1.2.** The calculation in percentage of the patients with oral lesions according to gender

There was a statistical higher difference between patients regarding the age parameter (Tab. 2.1, 2.2). The results of our study are consistent with da Silva's study<sup>10</sup>. Elderly patients have nutritional deficiencies, systemic diseases, changes in saliva. The third age population is more affected toward different lesions such as: infections, tumoral processes and other general disorders. These factors together with the presence of prostheses change the environment of the oral cavity and reinforce the development of lesions of the oral mucosa and affect the development of *Candida albicans*.

**Tab. 2.1** The frequency of oral lesion among age groups

Age group	Nr. Patients	Prosthetic stomatitis	Traumatic ulcer	Hiperplasia	Angular Cheilitis	Resin Allergy
50-65	51	21	14	10	5	1
65-85	105	45	30	19	10	1

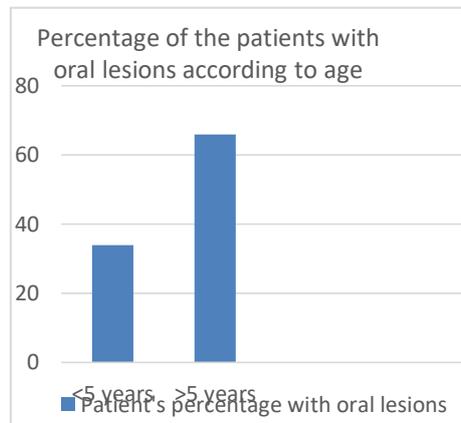


**Chart 2.2** The calculation in percentage of the patients with oral lesions

Another parameter included in our study was the longevity of the dentures (Results in the Tab 3.1, 3.2). Our result was consistent with da Silva's study. Wearing prostheses can reduce the protective effect of saliva, reduce the clearance by tongue and reduce the oxygenation of the oral mucosa, which leads to an increased tendency to develop lesions of the oral mucosa. In our study a significant statistical value of the patients with oral lesions was related to the patients who had their dentures for a period longer than 5 years. This is the reason the patients should be instructed to have new dentures after approximately 5 years of use.

**Tab. 3.1** The relation of oral lesions with the denture wearing longevity

Period	Prosthetic stomatitis	Traumatic ulcer	Hiperplasia	Angular Cheilitis	Resin Allergy
<5 years	26	13	10	4	0
>5 years	40	31	19	11	2

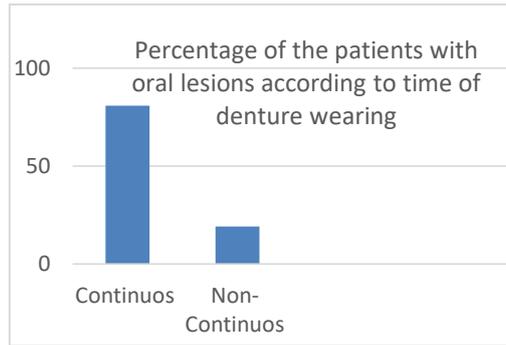


**Chart. 3.2** The calculation in percentage of the patients with oral lesions

A statistically difference was noticed between patients wearing prosthesis at day and night compared to the patients who keep them only during the day (4.1, 4.2). The Ph value decreases during the night as a result of the continuous maintenance of the prosthesis and reduced salivation. This is the reason patients should be instructed to keep out their dentures during the night and to store them in a water container. Based on the literature the patients should be instructed to clean their denture before storing them in a water, otherwise it is more advisable to keep them in dry rather than in a water container.<sup>12-14</sup>

**Tab. 4.1** Time of wearing dentures related to oral lesions

Time of denture wearing	Prosthetic Stomatitis	Traumatic Ulcer	Hyperplasia	Angular Cheilitis	Allergy	Total
Day and night	55	34	22	13	2	126
Day	11	10	7	2	0	30



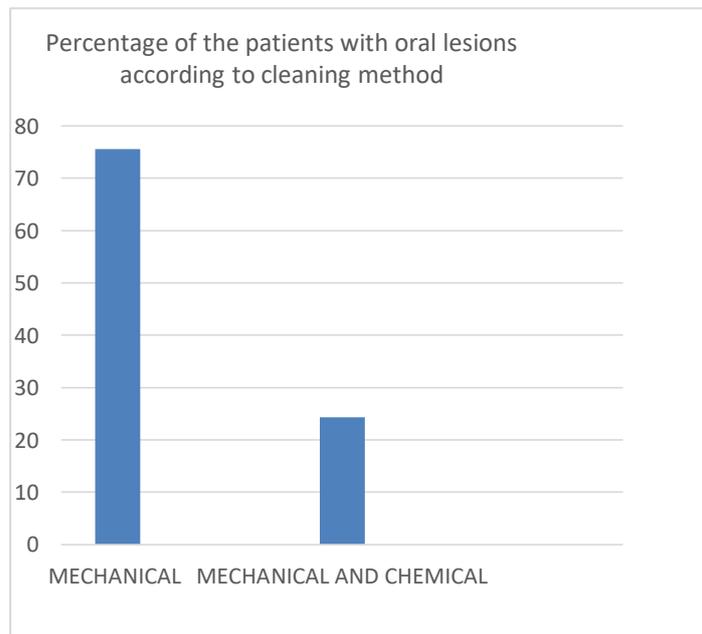
**Chart. 4.2** The calculation in percentage of the patients with oral lesions

The cleaning technique was also evaluated. The number of patients who performed mechanical and chemical cleaning of their dentures was lower compared to the patients who performed only mechanical cleaning. (Tab. 5.1, 5.2). This result is consistent with Shah and Ahmad's<sup>9</sup> study. One of the alternatives to the manual cleaning method is the ultrasound cleaning. In the chemical cleaning the following are recommended: use a non-abrasive denture cleaner, soak the dentures in a cleaning solution<sup>14</sup>. Cleaning methods, prosthesis integrity, poor oral hygiene, smoking and the quantity and quality of saliva influence the presence of prosthetic stomatitis<sup>11</sup>. Low oral hygiene increases the frequency of Candida positive cultures in dentures.

**Tab. 5.1** Cleaning methods related to oral lesions denture inducing frequency

Cleaning method	Prosthetic stomatitis	Traumatic Ulcer	Hyperplasia	Angular Cheilitis	Resin Allergy	Total
Mechanical and chemical	14	11	11	2	0	38
Mechanical	52	33	18	13	2	118

**Chart .5.2** The calculation in percentage of the patients with oral lesions



**Traumatic ulcer** (37.6%). It is a mechanical damage to the oral mucosa caused by irregular prostheses (prosthetic ulcer)<sup>12</sup>. It is typically surrounded by erythematous mucosa. The surface is usually covered with a yellow pseudomembrane. In our study it had the highest percentage in labial vestibular sulcus.

**Epulis fissuratum** (17.2%). Epulis fissuratum is a hyperplasia from prosthetic irritation caused by chronic tissue damage in contact with the inappropriate prosthesis border. The continuing trauma can increase the probability in turning the lesion into carcinoma<sup>13-15</sup>. Beside removing the causing factors, the management of epulis fissuratum includes the use of tissue conditioner or in more serious cases the tissue excision associated with tissue conditioner. In our study a high

connection was found between the incidence of epulis fissuratum and the amount of time that dentures were kept by the patients.

**Angular cheilitis** (9.6%). Angular cheilitis is a muco-cutaneous lesion with the presence of deep and ulcerated fissures in the corner of the mouth. It is associated with various factors such as: nutritional, systemic and medication in combination with local factors such as prosthesis retention<sup>16-18</sup>. The labial commissure is involved, generally bilateral. It generally stays for a long time and relapses often. The lesions are initially erythematous, slightly squamous in the cutaneous part of the commissure<sup>19-23</sup>. Later the mucosal part is affected. The patients refer about painful lesions. They often bleed while talking, eating, etc. In our study the percentage of incidence for angular cheilitis was 9,6%.

**Resin allergy.** Based on our study the percentage of the frequency of resin allergy was the lowest 1.28%. the mucosal reaction from the polymerization process of the resin is an action which includes the activation of the initiator. It is generally a process which derives from heat-curing, self-curing and light-curing. The patient is exposed to free monomer, which can cause a toxic reaction 23-26. Allergy can occur immediately after denture insertion or in a second stage of it. Resin allergy relieves or disappears once the prosthesis is removed. The results of our study support the hypothesis that allergy to prosthetic resin is a very rare phenomenon, consistent with the results of studies of other authors. For a substance which causes hypersensitivity reactions in the skin to cause the same reaction in the oral mucosa, 5-12 times higher concentrations are needed. How is the "resistance" of the oral mucosa to the onset of allergies explained?

1. Saliva dilutes the concentration of substance sensitizing and shortens the time of contact of the allergen with the mucosa.
2. Abundant vascularization of the oral mucosa leads to rapid absorption of substance sensitizing.

## CONCLUSIONS

The etiology and prevalence of oral lesions due to removable denture vary from one population to another. An explanatory program should be done to the denture wearing patients, by explaining in detail the reasons why the dentures should be kept out during the night. Prosthodontic patients should be instructed and educated about: the importance of periodic examinations due to changes in supporting tissues, early detection of mucosal lesions.

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**CITE AS**

Dr. Neada Hysenaj, Xhajanka, Irida Cenolli, & Endrit Papparisto. (2022). Evaluation and examination of oral lesions in patients treated with total removable prostheses. *Global Journal of Research in Dental Sciences*, 2(5), 1–6. <https://doi.org/10.5281/zenodo.7110534>