

Oral mucosal lesions in complete denture wearers

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Abstract *Objective* To determine the frequency of oral lesions related to gender, age, the length of time of denture usage, the balance of denture and cleaning methods.

Patients and methods 106 patients who had old complete dentures and came to Dental Department to have new complete dentures were registered in the study. Frequency in relation to different factors was estimated. Cleaning methods and frequency were divided into 3 subgroups respectively as tooth brush and tooth paste/soap, denture cleansing tablets and sodium carbonate and 3 times a day, every day, every 3 days and once a week. Distributions of oral lesions in different areas were noted. The data obtained were evaluated by one-way ANOVA u test, student t test. The level of statistical significance was set at $p < 0.05$.

Results In 106 patients (51 men and 55 women), 37-80 years of age with a mean age of 60.28 years, oral lesions were present more as the age increases, the more lesions were observed in female patients and associated with unstable dentures. The patients displayed statistically significant difference in presence of oral lesions with the method of cleaning and the way the patients used their dentures.

Conclusion The complete denture wearers should be educated about the importance of periodic examination due to changes of supporting tissues and early detection of mucosal lesions to maintain their oral and denture hygiene in optimum level.

Key words

Complete denture, oral mucosal lesions.

Introduction

Mucosal inflammation in denture wearers occurs in various forms – local, generalized, papillomatous. Acute and chronic inflammatory conditions of the oral mucosa can be classified on the basis of their respective etiological factors.¹ These include neuromuscular traumatic injuries arising from dentures with or without balanced occlusion,² traumatic injuries of oral

mucosa resulting from traumatic occlusion of various kinds,³ mere presence and action of the dentures as a foreign body,⁴ poor oxidation and ventilation of oral mucosa covered by dentures,⁵ inadequate retention of the dentures,⁶ inadequate mucosal resistance caused by various systemic diseases,⁷ endocrinologic and neurological conditions,⁸ accumulation of infectious material on the undersurface of denture,⁹ chemotoxic injuries to the oral mucosa caused by denture base material¹⁰ and poor nutrition.¹

Microbial plaque and *Candida albican* have also been implicated in the development of inflammation.² Angular cheilitis is observed at

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the corners of mouth frequently accompanying a generalized or papillomatous stomatitis. It may result from systemic disorder, but more commonly it is associated with an unclean and unstable denture.³ Traumatic hyperplasia in denture wearers is induced from chronic irritation from the periphery of unstable denture. It may develop into epulis fissuratum.⁴

Denture stomatitis is classified into three types, Newton type 1: Hyperaemia, which is associated with trauma; Newton type 2: Generalized erythema; and Newton type 3: Papillary hyperplasia only resolved by surgery.

The prevalence of denture stomatitis varies from 25%-65% depending on the population studied.⁵ In elderly patients, the increased incidence of disability following conditions such as stroke may limit their ability to effectively clean their dentures. Poor denture hygiene, continuous denture wearing and drug therapy (especially antibiotics and steroids) may lead to an increased frequency of yeast infection. The etiological factors in denture stomatitis are denture trauma and poor oral hygiene with a superimposed *C. albicans* infection). Denture stomatitis is more common in patients who wear their dentures day and night.^{6,7}

The study of various sites of oral mucosa, oral lesions in relation to its degree of tolerance or vulnerability to dentures should emphasize the importance of investigating carefully the complaint of the patient. Every effort should be exerted to determine the source of the trouble before undertaking corrective measures of the prosthesis.

Patients and methods

Edentulous patients wearing complete dentures reporting to the Prosthodontic Department of

de'Montmorency College of Dentistry, Lahore or referred from Dermatology Department, Fatima Jinnah Medical College/Sir Ganga Ram Hospital, Lahore, from January 2011 to June 2011 were asked to participate in the study. The diagnosis was based on history of the patient, clinical observation of morphology, character/behavior of the lesions (painless, nonhealing for few weeks/months). All registered patients were subjected to detailed clinical examination of the lesions taking into account the number, site, size, morphology and type of lesions.

All main factors were estimated in subgroups. Cleaning methods and frequency were divided into 3 subgroups respectively as tooth brush and tooth paste/soap, denture cleansing tablets and sodium carbonate and 3 times a day, every day and once a week.

The data were evaluated by one way ANOVA, u test, student t test. The level of statistical significance was set at $p < 0.05$.

Results

106 patients (51 men and 55 women), age range of 37-80 years with a mean age of 60 years were registered. Oral lesions in old denture wearers were examined, it was found that oral lesions were more in females than males. Oral lesions were also more frequent in old age patients than young patients. Regarding the severity of lesions, Newton type 1 was more frequent than type 2 and 3. The frequency of different lesions mentioned in **Table 1**. Most of the patients clean their dentures with tooth brush. Only 1 % use denture cleaning tablets as shown in **Table 2**.

Table 1 The frequency of oral lesions with gender.

Oral lesions	N&%	Male	Female
Newton Type1	30	10	20
Newton Type2	18	8	10
Newton Type 3	21	6	15
Epulis fissuratum	7	2	5
Viral stomatitis	5	3	2
Oral lesions with cutaneous involvement	2	1	1
Squamous cell carcinoma	1	1	0

Table 2 Frequency of cleaning and cleaning methods of dentures.

Group	N &%	3 times daily	Every day	Once a week
Group 1 (tooth brush only)	50	7	40	3
Group 2 (toothbrush and paste)	48	8	35	5
Group 3 (denture cleaning tablets)	2	0	1	1

Discussion

The frequency of oral lesions related to gender, age, the denture cleaning habits, education level and economic status has been studied in different societies like Japan, Turkey and many European societies. The results of this study match the results of other studies.^{1,2,3} Most of our patients belonged to the lower socioeconomic status as this study was done in a public hospital. Most of the patients who were seeking new sets of prosthesis, on examination showed different oral lesions. This suggests that these patients need a treatment before the new complete dentures can be made. The patients who had flabby ridge, fibrous inflammatory hyperplasia, traumatic ulcers and denture stomatitis persisted statistically significant longer than the patients who had healthy tissues.

To bring about a practical change in denture cleaning behavior, the dentist must reinforce the new behavior on regular basis. In European societies, the use of denture cleaning tablets is common because of media publicity whereas this study shows patients usually clean their denture mechanically by brushing or with paste. The role of *C. albicans* in denture stomatitis is very controversial. *Candida* spp. may be present as commensal organism in normal healthy

population. In denture stomatitis, trauma causes inflammatory exudate which enhances the adherence of *C. albicans* to denture surface. In patients with denture stomatitis, no *C. albicans* penetrates the denture acrylic but it is present in high concentration on denture surface, especially in porous and undercut areas. Antifungal agents do not need to be prescribed routinely and if used alone result in relapse and failure to resolve the condition. These drugs should be prescribed only where denture stomatitis fails to resolve and fungal involvement has been confirmed. Denture disinfection can be achieved by soaking the denture overnight in 0.2% chlorhexidine, this agent is effective against *C. albicans* also alternatively a mild solution of hypochlorite can be just as effective provided the dentures do not contain a resilient soft lining or metal base plate. The dentures are soaked overnight in a denture dish of water containing a few drops of household bleach. In the morning the patient must thoroughly rinse the dentures before placing them in the mouth.

Conclusion

The complete denture wearers should be educated in the importance of periodic examination due to changes of supporting tissues and early detection of mucosal lesions to

maintain their oral and denture hygiene in optimum level.

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