Prevalence of oral lesions in complete denture wearers- An original research

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Abstract:
Background: Complete denture patients are often associated with the various denture-related oral mucosal lesions. The purpose of this study is to evaluate the prevalence of denture-related oral mucosal lesions in complete denture patients.

Materials and Methods: The study was consisted of 225 patients having various denture-induced oral mucosal lesions from the outpatient department of the department out of the 395 completed denture patients examined. Data related to gender, age, length of denture use, hygiene, use, hygiene care were obtained. All the data were tabulated and analyzed.

Results: In 225 complete denture patients. Denture stomatitis (60.23%) was the common lesion present, followed by Epulis fissuratum and angular cheilitis. The denture-induced oral mucosal lesions were found more common in age >40 years (59.78%) and in females (52.70%) complete denture wearers.

Conclusion: The present studies showed that oral lesions associated with wearing denture are prevalent and create health problems that impact the quality of life of dental patients.

Key Words: Complete denture, denture stomatitis, Epulis fissuratum, angular cheilitis, oral mucosal lesions.

I. Introduction

Edentulism may be the last sequel of periodontal diseases and dental caries. In case of older adults, edentulism is essential as a correlate of self-esteem and quality of life. [1] Furthermore, the oral health of the completely edentulous patient is an important factor in relation to the nutrition, social interactions, and general systemic health of the patients. [2]

Denture-related oral mucosal lesions (DML) may represent acute or chronic reactions to denture plaque, yeast, constituents of the denture base material, poor retention and mechanical injury. Nearly a half of denture wearers present at least one denture-related mucosal lesion, with the three most common denture-related mucosal lesions among elderly wearers of removable denture being denture stomatitis, angular cheilitis, and traumatic ulcer. [3] 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 such as neuromuscular traumatic injuries arising from dentures with or without balanced occlusion. 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. [4] 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. [5, 6, 7]

Angular cheilitis is a nonspecific term used to refer to all inflammations, erosions, ulcerations and encrustations at the corners or angles of the mouth. Patient may complain feeling of dryness and burning sensation at the corners of the mouth and difficult mouth opening. Mainly caused by reduced vertical dimension in worn out complete dentures, nutritional deficiency riboflavin, folate, iron and protein deficiency, candida infection, occlusal plane of the lower teeth is too high and sagging of facial tissues with age.

Denture-induced traumatic ulcers may appear in different shapes and sizes, usually round or oval with a diameter of 1 to 8 mm. A typical location of denture irritation is either the non-mobile oral mucosa or the regions where the mucosa is mobile during functional movements. Etiological factors may include overextended...
denture borders, rough areas on the inner surface of dentures, bony spicule under the denture or it may be due to suppression of mucosal resistance to mechanical irritation e.g., diabetes mellitus and vitamin deficiency, xerostomia, radiation therapy. Epulis Fissuratum is benign hyperplasia of fibrous connective tissue which develops as a reactive lesion to chronic mechanical irritation caused by the flanges of poorly fitting denture.[3]

According to previous studies, nearly a half of denture wearers present at least one denture-related mucosal lesion, and three most commonly found denture-related mucosal lesions among elderly wearers of removable denture are denture stomatitis, angular cheilitis and traumatic ulcer. The present study was done to evaluate and analyze the prevalence of oral mucosal lesions in complete denture wearing patients.

II. Materials and Methods

The study was carried out on the complete denture wearing patients came to the Department of Prosthodontics over a period of 1-year. A total of 395 patients were examined and in that 225 patients were found to have various types of oral mucosal lesions. Data of gender, age, length of denture wearing, denture cleaning methods, and the presence of oral mucosal lesions were recorded. Informed consent was taken from all the patients.

Inclusion criteria
Patients wearing both maxillary and mandibular complete denture.

Exclusion criteria
New patient visiting for the preparation of complete denture

Statistical analysis
All data were collected, tabulated and percentage analysis was done.

III. Results

A total of 395 patients were examined and in that 225 patients were found to have various types of oral mucosal lesions. In 16 patients two types of oral mucosal lesions were present. Denture stomatitis (60.23%) was the most prevalent lesion present, followed by the presence of the epulis fissuratum 16.51% and angular cheilitis (7.9%). Papillary hyperplasia was found to be present in 7.4% of the complete denture wearing patients. About 5.8% patients shown presence of traumatic ulcer and occurrence of the denture-induced or chronic irritation induced squamous cell carcinoma was found in 1 patient.

The study patients were divided into two age groups of <40 years and >40 years. The denture-induced oral mucosal lesions were more common seen in the elderly patient’s, i.e., age group of >40 years (59.78%). Females (52.70%) were shown to have more oral mucosal lesions as compared to males.

Different time period of contact of the dentures were studied and it is found that patients wearing dentures for more time period (>5 years) were having more chances of development of the oral mucosal lesions (65.40%). The cleaning method of combination of mechanical and chemical aids leads to less chances of oral mucosal lesions than mechanical cleaning alone (71.36%)

IV. Discussion

Access to dental care is improving in the most countries, and many people are able to maintain their natural teeth longer than the past, but there also people who are edentulous and need use denture. Oral mucosal inflammation in case of denture wearers occurs in local, generalized, or papillomatous forms. Acute and chronic inflammatory lesions of the oral mucosa can be caused by various etiological factors including traumatic injuries due to traumatic occlusion, neuromuscular traumatic injuries due to improper balanced occlusion. [9] In the present study, denture stomatitis (60.23%) was found to be commonest lesion in complete denture wearing patients, which is in accordance to the study done by Shah and Ahmad and in contrast to the study by Patil et al., [10] in which traumatic lesions were found more common. It was noticed that overnight wearing of the denture is an important factor in the pathogenesis of the denture stomatitis as the pH value of the palatal mucosa decreases due to continuous wearing of the denture, due to products of the yeasts, lactobacilli and streptococci. Furthermore, reduced salivation at night is an additional factor.[11]

Other factors such as denture cleaning methods, integrity of the denture (presence of crack, fracture or holes), poor oral hygiene, smoking, and quality and quantity of saliva can influence the presence of denture-induced stomatitis. The Candida albicans role in the pathogenesis of the denture stomatitis is well investigated, and various strains of the Candida have been shown to populate the denture base and the oral mucosa. [12] Aging has been related to cause progressive increase in the Candida in the oral cavity. However, various studies showed that sole factor of complete denture wearing affected the number of Candida species; independent of the age of the complete denture wearer. The poor oral hygiene maintenance in denture patient increases the frequency of positive cultures for Candida in the dentures. [1]
Angular cheilitis is associated with a variety of factors such as nutritional, systemic and drug related factors in combination with the local factors like wearing of complete denture, as it is common in edentulous patients.

In our study, we reported one case of denture trauma induced oral squamous cell carcinoma. Panat et al. [13] and Shahand Ahmad et al. [10] also reported a case of oral squamous cell carcinoma induced by ill-fitting dentures. The most common location for the denture irritation induced oral squamous cell carcinoma is floor of the mouth. The reason for development of lesion at this site is due to flange extensions of the mandibular denture. The denture irritation hyperplasia or papillary hyperplasia and traumatic ulcer is caused by chronic injury of the tissue in contact with the ill-fitting denture border. In this study, we found that denture-related oral mucosal lesions were more common in age group of >40 years, this was also seen in study by da Silva et al., in which 70% patients were above age of 40 years. In recent studies, it was shown that aged and denture stomatitis patients show a decreased number of salivary neutrophils than controls and also had dysfunctions in the phagocytosis and killing of C. albicans. Age is also associated with the development of various nutritional deficiencies, systemic diseases, changes in the quality and quantity of saliva. These factors in accompany with the denture use can facilitate changes in the oral environment and enhance the development of oral mucosal lesions.

In addition, age is also associated with systemic diseases, nutritional deficiencies, polypharmacy, and changes in the quality and quantity of saliva. These factors, along with denture use, may facilitate changes in the oral environment and enhance the development of C. albicans.

The increased frequency of denture induced lesions among female is not much understood, but in can be explained by age-related and hormonal reasons. In case of perimenopausal and postmenopausal females, the decrease of the estrogen and progesterone and the atrophy of the oral mucosa contribute to the exacerbation of the inflammatory response for chronic irritation caused by the use of complete dentures, leading to increasing the incidence of oral mucosal lesions in female patients. The female prevalence was also high in the present study. It is in accordance to the study done by Pati et al., Shahand Ahmad and da Silva et al. The mechanical cleaning along with chemical aids found to be more effective, as chemical agents like silicone polymer provides protective cover for dentures as a final step in the cleaning process. [14]

In the present study, patients using denture for long-term (>5 years) were seen to be more associated with the presence of the development of the oral mucosal lesions, which was also seen in study by da Silva et al. Therefore, wearing of saliva can reduce the protective effect of saliva, decreased cleaning by tongue and ultimately reduces oxygenation of the oral mucosa and leads to the increased tendency for the development of the oral mucosal lesions. This study therefore reinforces the importance of the dental services for the edentulous adults.

V. Conclusion

The present study showed that oral lesions associated with wearing denture are prevalent and create health problems that impact the quality of life of dental patients.

References


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PICTURES

Traumatic ulcer present on the palatal mucosa

Epulis fissuratum present in right buccal vestibule.

Denture stomatitis involving maxilla.
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Malignant lesion arising from traumatic ulcer present in left buccal mucosa.