

# Prevalence of Denture Related Oral Mucosal Lesion - A Cross Sectional Study

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## Abstract

Heterogeneous groups of oral lesions are likely to develop among denture wearers. The objectives of this study were to determine the exact prevalence of oral lesions among denture wearers attending the clinics of the Annoor Dental College, Muvattupuzha. Of the total 210 of the denture wearing patients, 166 (79%) were males and 44 (21%) were females. Comprehensive oral examination was performed for all patients. Any denture-induced lesion was biopsied. Data collected were analyzed using SPSS program. Oral lesions were found in 20.5% of the cases under study (43 out of the total 210 denture wearers). Denture-induced fibrous hyperplasia was the most common type of lesion detected (41.9%). A significant correlation ( $P = 0.004$ ) was found between the type of denture and oral lesions in this study. The prevalence of denture-induced oral lesions was found to differ significantly from that reported in other studies. The diversity of these lesions among different studies depends on the quality and materials of dentures delivered, the techniques used, and the methods of patients' instructions adopted.

## INTRODUCTION

A relationship has been reported between oral mucosal lesions and aging. Due to reduced immunologic reactivity, impaired DNA repair capacity, impaired carcinogen metabolism and atrophy of oral tissues, particularly of the oral epithelium and the salivary glands, oral mucosal conditions tend to develop more frequently and more rapidly in aging populations. Age has an important influence on the prevalence of oral mucosal lesions. The prevalence of oral mucosal lesions has been shown to be higher in older subjects than in younger individuals. However, age alone is not the only factor and other findings such as trauma, medications and oral and denture hygiene might affect the development of oral mucosal lesions. Oral mucosal lesions usually occur due to systemic diseases, nutritional disorders, medication side effects or wearing ill-fitting dentures in the elderly. In addition to age, factors such as gender, educational level, smoking and systemic diseases might pave the way for oral lesions. Since the level of education is an effective element in oral hygiene maintenance, it might be important in the formation of oral lesions. Oral health status is important for the quality of life, owing to physical, social and psychological factors. Early detection and prevention of oral lesions by dental practitioners can improve the quality

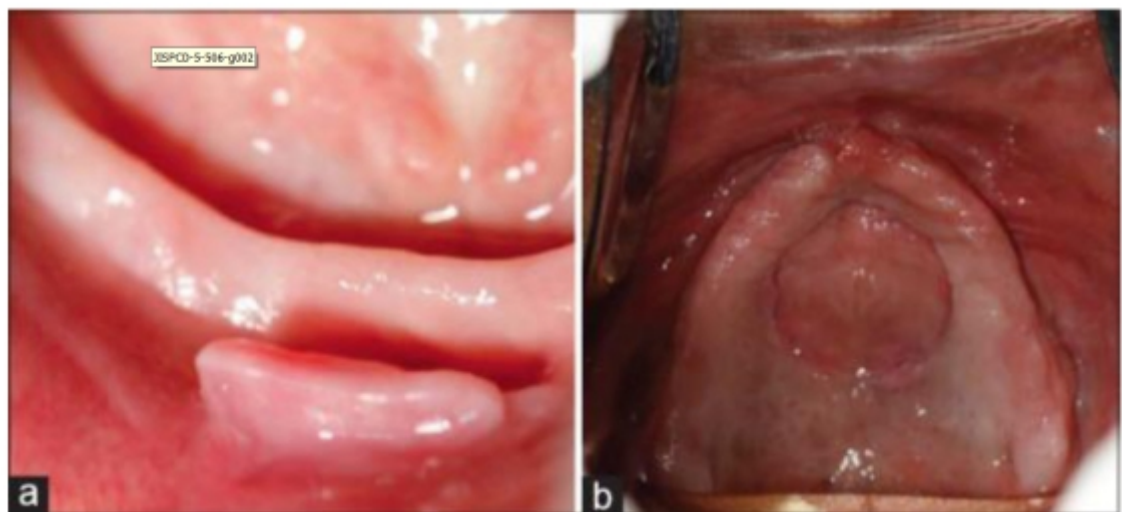
of life of this population and aid in the attainment of quality aging. The prevalence of oral mucosal conditions is an important parameter in evaluating the oral health of the elderly. Therefore, the aim of this study was to determine the prevalence of oral lesions in relation to sex, age, medication use, systemic diseases, the duration of denture usage, education level, oral hygiene status and tobacco and alcohol use.

## CONTENT

The prevalence of oral mucosal lesions has been shown that tooth loss increases with age, and a removable partial denture (PD) may be later substituted by a complete denture (CD). Some authors suggest that length of denture use increases with increasing age of patients, and that they are reluctant to restore or replace old dentures, which can cause oral lesions.

Several lesions are found to be more frequent in females than in males. This high frequency of lesions among females is not well understood. It has been suggested that it may be due to the fact that female patients wear their dentures more often and perhaps for longer periods of time for esthetic purposes.

The association between poor oral hygiene and denture-related oral mucosal lesions



Clinical photograph showing (a) denture-induced fibrous hyperplasia in the mandibular labial vestibular area and (b) well-defined lesion in the mid-palatal area related to the use of suction rubber to improve denture retention

(DMLs) is not well established because this relationship is complex.

The literature suggests that defective dentures create additional opportunities for lodged food and limit the natural cleaning action by the tongue, lips, and cheeks. Denture cleaning methods may affect the condition of dentures, and pigmentation and abrasions in dentures occur with the use of toothpaste or toothbrush. Patients often think that ordinary teeth cleaning methods are suitable for denture cleaning. The mechanical cleaning combined with effective and inexpensive chemical aids, such as sodium hypochlorite and coconut soap, seems to be more appropriate. DMLs may represent acute or chronic reactions to denture plaque, yeast, constituents of the denture base material, poor retention, and mechanical injury. Acute and chronic irritation from defective or ill-fitting dentures may injure the oral mucosa.

Removable dentures can injure oral tissues and the use of dentures is associated with a high frequency of oral mucosal lesions. In another study of oral mucosal lesions among elderly persons, 52% of the wearers of both full and removable PDs had proliferative or ulcerative lesions.

The fact that the area of the oral mucosa covered by a total prosthesis is greater than that covered by a PD may be an important factor for this increase in full denture wearers. The irritant effect of the denture base materials on the tissue changes in these patients should not be underestimated.

Traumatic ulcers (TUs) most commonly develop within 1–2 days after insertion of new dentures, but can also be found in old, ill-fitting dentures, because of overextended denture flanges, or unbalanced occlusion. These were found to occur more frequently during the first 5 years of denture use. TUs have been found in 2–3% of institutionalized denture wearers. Denture stomatitis (denture sore mouth) is a term used to describe inflammatory changes in the oral mucosa of denture-bearing tissues. These changes are

characterized by erythema and are found under complete or PDs in both jaws, but more frequently in the maxilla. In a study of 463 randomly selected geriatric denture wearers, the prevalence of denture stomatitis was found to be as high as 65%. (25) The lesions are seen more frequently among women than men.

Angular cheilitis is the clinical diagnosis of deep fissures affecting the angles of the mouth and has an ulcerated appearance. The prevalence of angular cheilitis among wearers of CDs has been shown to vary between 8 and 30%. Angular cheilitis is seen more frequently in women than in men and the condition seems to be associated with the wearing of removable dentures, but not with an edentulous state per se.

A common tissue reaction to ill-fitting dentures is the occurrence of tissue hyperplasia of the mucosa in contact with the denture border (inflammatory hyperplasia, epulis fissuratum, redundant tissue).

Denture irritation hyperplasia was found in 5–10% of non-randomized groups of denture wearers. In a large investigation on the prevalence of oral mucosal lesions in different age groups, denture irritation hyperplasia was found in 6.3% among subjects aged 55–64 and in 11.5% among those aged above 65. The lesions are the result of chronic injury by unstable dentures or by thin, overextended denture flanges. The proliferation of tissue may take place relatively quickly after prosthetic treatment.

After replacement or adjustment of the dentures, the inflammation and edema may subside and produce some clinical improvement of the condition. Flabby ridge (removable and extremely resilient alveolar ridge) is due to a replacement of bone by fibrous tissue. The condition is found more often in women than in men and is usually located in the anterior region of the maxilla. Flabby ridges in denture wearers should be removed surgically in order to minimize progressive reduction of residual ridges.

It is usually claimed that the possibility of malignant transformation of denture-

induced lesions should be considered. In a retrospective study of 560 patients with intraoral epidermoid carcinomas, of whom 204 wore dentures, a direct connection between irritation by the prostheses and development of carcinoma was claimed in 86 of the cases. The carcinomas were localized to the palate, the alveolar ridges, and the mucobuccal and lingual folds. Seventy percent of the tumors were found in women, although oral carcinomas as a whole occur more frequently in men. Chronic irritation from ill-fitting or defective dentures has often been mentioned as a contributing factor in the development of oral cancer. The complete denture wearers (CDWs) should be educated about the importance of periodic examination due to the changing supporting tissues for detection of early mucosal lesions, in order to maintain their oral and denture hygiene at an optimum level.

Moreover, to prevent or minimize the extent of the lesions, denture wearers should be recalled regularly for an examination of the oral cavity and the dentures. It is important that the examination is carried out by a person who has adequate medical knowledge.

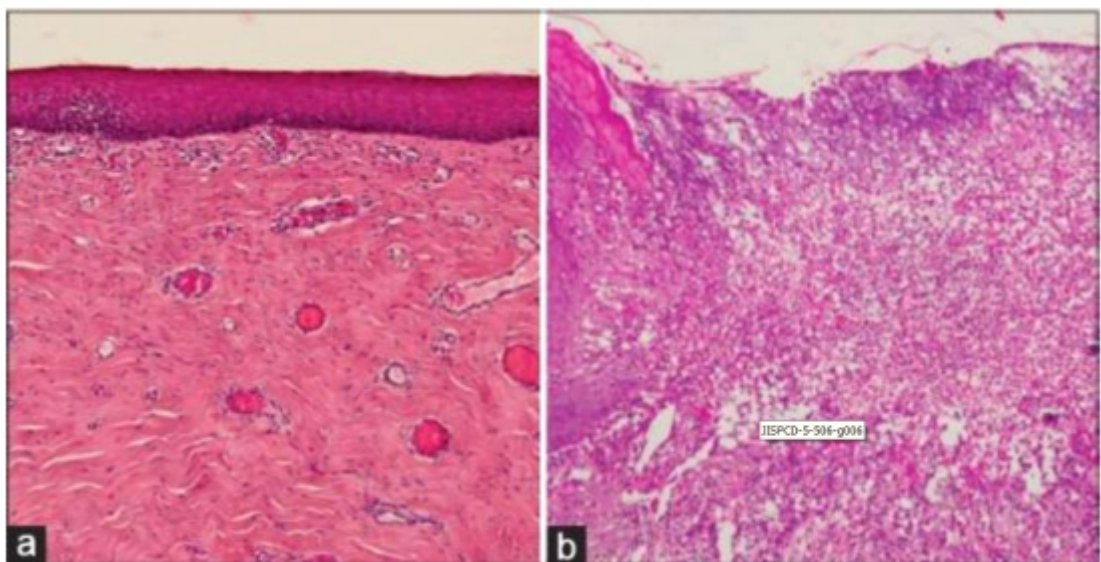
None of these studies seem to provide definite evidence that oral carcinomas may develop due to chronic mechanical or chemical irritation by dentures; however, the studies underline the necessity of strict and regular control of all subjects wearing removable dentures.

DMLs can be prevented if denture wearers take proper care of their dentures and maintain good oral hygiene. Although no substantial evidence is reported, malignant lesions such as squamous cell carcinoma and gingival carcinoma have been associated with chronic irritation. Therefore, dentists can play a significant role in educating patients and in the early detection of malignant lesions in denture wearers.

Aims of this study were to determine the exact prevalence of oral lesions among denture wearers attending the clinics of the Annoor Dental College, Muvattupuzha, and to find out any correlation between these lesions and different types of dentures.

### Histopathological Findings

Histopathologically, lesions diagnosed as denture-related TUs showed microscopically non-specific ulceration with mixed inflammatory cell infiltration and without any features



Photomicrograph showing (a) fibrous tissue covered by atrophic epithelium with absence of rete ridges (H and E  $\times 20$ ) and (b) non-specific ulceration (H and E,  $\times 20$ )

of epithelial dysplasia or malignancy. Cases with IFH showed histopathologically well-vascularized fibrocollagenous tissue covered by squamous stratified epithelium (ortho or parakeratinized. With regard to the RPL, they appeared clinically as atrophic mucosa in the mid-palatal area where the maxillary dentures used to have a small, rounded piece of rubber for retention.

Histopathologically, these lesions showed atrophic epithelium with variable degree of inflammatory cell infiltration. No features of atypia were noted in the examined cases.

### **Radiographic Findings**

Radiographic findings for all the cases reported were found to be non-specific except for an ill-defined radiolucency in the denture-bearing areas.

### **CONCLUSION**

In conclusion, the prevalence of denture-induced oral lesions was found to differ significantly from that reported in other studies. The diversity of these lesions among different studies depends on the type, quality and materials of dentures delivered, techniques used, and the methods of patients' instructions adopted.

However, further studies are needed in this regard on a larger population for the results to be conclusive.

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