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Original Research

Assessment of cases of denture stomatitis- A clinical study

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ABSTRACT:

Background: Denture stomatitis (DS) designates the inflammation of the oral mucosa mostly the palatal, underlying a denture. The present study was conducted to assess cases of denture stomatitis. **Materials & Methods:** 240 cases of complete denture wearer were recorded. The prevalence of denture stomatitis was recorded. Swab samples from the palate and the palatal surface of the upper dentures of these patients were collected and examined mycologically. **Results:** Out of 240 patients, males were 140 and females were 100. Denture hygiene was good in 14%, satisfactory in 20% and poor in 56%, denture age was 1-5 years in 40%, 5-10 years in 30% and >10 years in 20% and candida denture colonization (CFU/ml) was <1000 in 35%, 1000-3000 in 20%, 3000-8000 in 20% and >8000 in 25%. The difference was significant ($P < 0.05$). Grading 0 was seen in 8.3%, 1 in 16.6%, 2 in 23.75% and 3 in 51.25%. The difference was significant ($P < 0.05$). **Conclusion:** The prevalence of denture stomatitis was high among complete denture wearer. Maximum cases had grade 3.

Key words: Denture stomatitis, Palate, candida denture colonization

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INTRODUCTION

Denture stomatitis (DS) designates the inflammation of the oral mucosa mostly the palatal, underlying a denture. It is found in around 50% of edentulous patients wearing dentures and it is more frequent in women than in men.¹ In 1962, Newton classified DS into 3 types on a clinical basis, type one: a focal inflammation which may indicate the early stage of the disease. Type two: a generalized inflammation characterized by a diffuse erythema of the mucosa covered by the denture. Type three: an inflammatory papillary hyperplasia. Type two is the most common between the 3 types of DS.²

The inflammatory changes are characterized mainly by erythema and are found under complete or partial dentures in both jaws, but more frequently in the maxilla. Lesions of the oral mucosa associated with wearing of removable dentures may represent acute or

chronic reactions to microbial denture plaque, a reaction to constituents of the denture base material, or a mechanical denture injury.³

Candida albicans has been shown to be the principal *Candida* strain responsible for inflammatory pathology, though various species of *Candida* like *C. dubliniensis*, *C. Parapsilosis*, *C. Krusei*; *C. Tropicalis* and above all *C. glabrata* have been isolated from the inflammatory lesion.⁴ The pathogenesis of *Candida* – associated denture stomatitis is elaborate and multifactorial. *C. albicans* is a normal oral microorganism, and upto 51% of people carry this organism without clinical evidence of infection. Local and systemic factors can determine the transformation of *C. albicans* from a commensal to a pathogenic organism.⁵ The line between its status as yeast and hyphae is very thin and as the host cell becomes immunocompromised, it becomes active and starts secreting several hydrolytic enzymes such as

proteinases and phospholipases which help in their adherence to host cells and digesting their cell walls for nutrient supply to assist further invasion.⁶ The present study was conducted to assess cases of denture stomatitis.

MATERIALS & METHODS

The present study was conducted among 240 cases of complete denture wearer since 3 years. All were informed regarding the study. Data such as name, age, gender etc. was recorded. All cases were recalled at regular basis and the prevalence

of denture stomatitis was recorded. Swab samples from the palate and the palatal surfaces of the upper dentures of these patients were collected and examined mycologically. DS-modified Newton’s index (NI): 0 = no inflammation; 1 = pin-point hyperemia; 2 = diffuse erythema; and 3 = papillary hyperplasia) in the complete denture wearers. Data thus obtained were clubbed together and were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 240		
Gender	Males	Females
Number	140	100

Table I shows that out of 340 patients, males were 140 and females were 100.

Table II Assessment of parameters

Variables	Parameters	Percentage	P value
Denture hygiene	Good	14%	0.01
	Satisfactory	20%	
	Poor	56%	
Denture age (years)	1-5	40%	0.02
	5-10	30%	
	>10	20%	
Candida denture colonization (CFU/ml)	<1000	35%	0.05
	1000-3000	20%	
	3000-8000	20%	
	>8000	25%	

Table II, graph I shows that denture hygiene was good in 14%, satisfactory in 20% and poor in 56%, denture age was 1-5 years in 40%, 5-10 years in 30% and >10 years in 20% and candida denture colonization (CFU/ml) was <1000 in 35%, 1000-3000 in 20%, 3000-8000 in 20% and >8000 in 25%. The difference was significant (P< 0.05).

Graph I Assessment of parameters

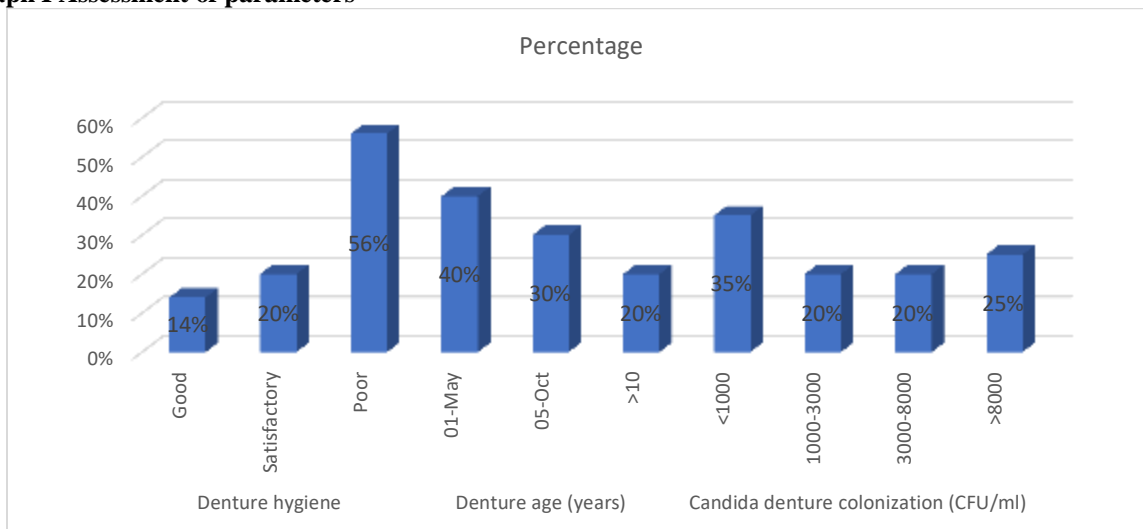


Table III Prevalence of denture stomatitis

Total Cases	DS	Percentage
240	123	51.25%

Table III shows that 35.2% had denture stomatitis.

Table IV Grading of DS

Grading	Number	P value
0	8.4%	0.01
1	16.6%	
2	23.75%	
3	51.25%	

Table IV shows that grading 0 was seen in 8.4%, 1 in 16.6%, 2 in 23.75% and 3 in 51.25%. The difference was significant ($P < 0.05$).

DISCUSSION

Predisposing factors to DS are usually divided into local and systemic. Diabetes mellitus and conditions of nutritional and immunity deficiencies are among the systemic factors. As for the local factors, the most commonly stated are connected to the denture's age, poor hygiene, microbial colonization, and continuous wearing.⁷ The presence of the denture on the oral mucosa alone serves as a catalyst for the initiation of denture stomatitis by altering the local microenvironment by decreasing pH, saliva flow and mechanical cleansing, serving as a reservoir for harbouring microorganisms. Of these microorganisms, it is generally regarded that *Candida* species, particularly *Candida albicans*, is one of the most common causative agents of denture stomatitis.⁸ In fact, they have been found to comprise approximately eighty percent of the microorganisms recovered from the oral mucosa of denture wearers. Certain bacterial species, like *Staphylococcus* species, *Streptococcus* species, *Fusobacterium* species or *Bacteroides* species has been identified in patients with denture stomatitis.⁹ The present study was conducted to assess cases of denture stomatitis.

In present study, out of 240 patients, males were 140 and females were 100. Denture hygiene was good in 14%, satisfactory in 20% and poor in 56%, denture age was 1-5 years in 40%, 5-10 years in 30% and >10 years in 20% and candida denture colonization (CFU/ml) was <1000 in 35%, 1000-3000 in 20%, 3000-8000 in 20% and >8000 in 25%. Khajuria et al¹⁰ assessed the cases of denture stomatitis among complete denture wearers. The present study was conducted on 445 completely edentulous patients wearing complete dentures. In all patients, careful examination was done to evaluate the degree of the DS-modified Newton's index (NI): 0 = no inflammation; 1 = pin-point hyperemia; 2 = diffuse erythema; and 3 = papillary hyperplasia) 4,5 in the complete denture wearers. Out of 445 patients, males

were 245 and females were 200. The difference was non-significant ($P = 0.1$). Out of 445 cases, DS was seen in 210 (47.1%) cases. 52% of maxillary and 43% of mandibular dentures showed 0 grading, 25% maxillary and 20% mandibular dentures showed 1 grading, 13% maxillary and 25% mandibular dentures showed 2 grading and 10% maxillary and 12% mandibular dentures had 3 grading. The difference was significant ($P < 0.05$).

It has been observed that grading 0 was seen in 8.4%, 1 in 16.6%, 2 in 23.75% and 3 in 51.25%. Aoun et al¹¹ evaluated sixty patients (40 women, 20 men; age range 40-80 years) showing clinical evidence of denture-related stomatitis. Swab samples from the palate and the palatal surfaces of the upper dentures of these patients were collected and examined mycologically. Denture's age, hygiene, night wearing and colonization by *Candida albicans* were evaluated and analyzed statistically. The statistical analysis showed a significant role for denture's hygiene, night wearing, and colonization by *Candida albicans* in the installation of the denture stomatitis. Patient's gender and age, as well as the denture's age, were not significant predictors of the disease. Celic et al¹² a total of 200 patients took part in this study. Half of the examined patients (100) wore CD and the other half (100) RPDs. There were 63 males and 137 females, aged between 45 and 83 years. Different smoking habits, denture wearing habits, denture hygiene habits, denture cleanliness and oral hygiene instructions had significant influence on the degree of DS in CD wearers ($p < 0.01$). In the RPD wearers, denture material and denture support had a significant influence on DS ($p < 0.01$).

The shortcoming of the study was small sample size.

CONCLUSION

Prevalence of denture stomatitis was high among complete denture wearer. Maximum cases had grade 3.

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