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Denture Induced Oral Mucosal Lesions Among Patients in Dhaka City

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Abstract **Original Research Article**

Background: Denture wearers presents some common mucosal lesions as a results some mucosal changes occurs such as ulceration, hyperplasia, swealling, colour change etc. The quality of a patient's life becomes hamper and it affects on mastication speech and swallowing. Some symptoms of pain, irritation, dyscomfort and burning sentation. ***Methodology:*** A cross sectional, observational study conducted at Uttara in Dhaka from 1st April to 31st July 2025. Both genders of two hundred partially and completely edentulous patients were included in the study. The age group of the patients was between 25 to 85 years. It was a cross-sectional observational study. At least four months observes to wearing complete or partial dentures in both arches or single arch for were included. ***Results:*** Out of 200 patients 45% had no mucosal lesions associated with dentures whereas 55% patients presented with lesions. Out of all the lesions the most frequently reported lesion was the traumatic ulcer 50%, followed by denture induced hyperplasia 8%. Denture stomatitis was 4% and angular cheilitis was least reported in our patients 3%. 32% patients clean their dentures regularly and 68% patients do not clean their dentures or being irregular, Night wearing of the prosthesis was found in 58% patients whereas 42% never wore dentures while sleeping. ***Conclusion:*** Traumatic ulcers were the frequently observed oral mucosal lesions with complete or partial removable dentures and were 55% reported in our patients. The all lesions are the factors like patient's age, denture hygiene maintain, duration of denture use, nocturnal uses was found.

Keywords: Complete Dentures, Partial dentures, Denture Stomatitis, Edentulous mouth, Hyperplasia, Denture related lesions.

INTRODUCTION

Complete or partial tooth missing is replaced by fabricating complete and partial dentures.[1] This rehabilitation improves patients life style, but if the denture improperly use such as improper cleaning, also poor fitting and mechanical irritation results in mucosal changes [2-4]. Oral mucosal lesions are the abnormal alteration in mucosal colour, texture, swelling or loss of mucosal surface integrity [5]. The lesions found in the form of hyperemia, edema, ulceration hyperplasia etc [6]. Patients' quality of life is often affected, as they frequently report difficulties with mastication, swallowing, and speech, along with symptoms such as burning sensation, pain, and irritation [3,5,6] Denture stomatitis commonly arises from inadequate denture hygiene, ill-fitting prostheses, or failure to capture the fine anatomical details during denture fabrication [6,7]. Additionally, prolonged use of dentures particularly those worn for more than six years predisposes to fungal growth beneath the denture base, leading to tissue inflammation. Night wearing use are more prone to develop stomatitis [7].

Lack of periodic recall visits causes bad oral health condition and Angular cheilitis results from poorly fabricated dentures with reduced vertical height that results in accumulation of saliva in the corners of mouth resulting inflamed tissues around the oral commissure [6,8]. Over extended denture borders causes traumatic ulcers it is commonly results from, poor denture finishing and polishing, improper occlusal adjustments. Repeated trauma causes denture induced hyperplasia [2,5,6].

Various changes in oral mucosa can occur. When dentures regularly used as a result lesions slowly progress. The slow lesion then tern to advance stages. Patients co operaton needed when it goes to advance stages. As advance the more complex treatment

proceduce needed [4,6]. Regular follow up, denture care and periodic replacements of prosthesis if needed is important [8-14].

Since there were differences reported in various prevalent. Studies in different countries, cities and encounter that is clinical based factors responsible for denture related mucosal lesions. In our clinical setup many patients report with mucosal lesions on daily basis and their cure not only demands frequent recall visits but also add workload on clinics and added expense. By knowing the frequency and distribution of the lesions we can highlight the factors responsible for their occurrence in our region and can undergo better treatment planning and focused on counselling the patients about the importance of regular recall visits, cleaning of dentures, regular maintenance and periodic replacement of the dentures.

The purpose of the current study was to know the pattern and distribution of the observed oral mucosal Denture Induced lesion. Patients wearing removable dentures and their association with age, gender, denture age, nocturnal use and denture hygiene habits plays role on mucosal lesion.

METHODOLOGY

A total of 200 partially and completely edentulous patients of both genders were selected from Uttara Dhaka in four months period**:** from 1st April to 31st July 2025. It was a cross-sectional observational study. Non probability purposive sampling was used to select the patients. The age ranged of the patients was 25 to 85 years. Sample size was estimated from the previous study on prevalence of denture related mucosal lesions. Patient wearing removable complete or partial dentures in both jaw or single jaw for at least four months were included. Only acrylic dentures were included. Patients with newly inserted dentures less than 4 months wear were not included. Patients with terminal illnesses, a recent history of use of antifungals were excluded. Those patients who were not ready to give informed consent were also not included in the study. Demographic data like age, gender type of prosthesis (complete or partial dentures), age of the denture, nocturnal denture use, denture cleaning was recorded.

The history taking and clinical examination was carried out. All the patients were examined and diagnosed by the same team to avoid bias in data collection. Detailed history about the age of the denture, nocturnal wearing and the denture cleaning habits was taken. Examination was done by using diagnostic instruments (mirror, probe) and by manual palpation. Data collection was done and recorded in examination form. The denture induced lesions i.e.; denture stomatitis, candidiasis, angular cheilitis, traumatic ulcers and denture hyperplasia were examined. The diagnosis of all the lesions was made based on patients' history and clinical characteristics of the lesions. Denture stomatitis was defined as the palatal oral mucosal inflammation and ulceration if tearing or laceration were evident and it was diagnosed using Newton crieteria [8,6].

Candidiasis was seen as creamy white sloug hunder the denture that can be removed by the wet gauze [4]. Angular cheilitis is the inflammation at the corner of the mouth or painful red fissures due to loss of denture vertical dimension [9]. It was diagnosed on the basis of its clinical appearance. Traumatic ulcers were defined as oval or round lesions with well-defined boarders in contact with dentures due to extreme pressure [3]. Denture induced hyperplasia was defined as reactive lesion resulting into over grown mucosa due to excessive mucosal overloading and pressure [5]. Prevalence of oral mucosal lesion could be different in different age groups; similarly, the age of denture affects their prevalence. Therefore, the patients were divided into two age groups < 50 and more than 50 years. Age of denture use was divided into 4 groups,1-5, 6-10,11-15, >15 years.

Statistical analysis:

Descriptive statistics were expressed as frequency and percentages and were calculated for age, gender, type of denture, night wearing, denture cleaning, age of denture. Correlation between demographic variables (patient age, gender, denture age, denture cleaning, nocturnal denture use) and mucosal lesions was found using Chi Square (Fisher exact test). Data was analyzed in SPSS vr 20, p value was considered significant at 5% significant level.

RESULTS

Two hundred removable denture prosthesis patients were selected. 80(40%) patients reported were males whereas n= 120(60%) were female patients. The age ranged from 25 to 85 years and average age was 60 years±SD 13.22. The most frequent age group presented was the age group more than 50 years; 150(75%) (Table I).

Out of 200 patients 90(45%) had no mucosal lesions associated with dentures whereas 120(60%) patients presented with lesions (Table I). Regarding the prosthesis type; the complete denture was the most commonly observed prosthesis type out of which 70(35%) patients used only mandibular complete denture, 42(21%) used maxillary complete denture, whereas 24(12%) had dentures in both arches. Partial denture prosthesis was frequently observed in mandibular arch 46(23%) and 30(15%) in maxillary whereas 10(5%) partial dentures were observed in both arches.

Out of all the lesions the most frequently reported lesion was the traumatic ulcer 96(48%), followed by denture induced hyperplasia 24(12%). Denture stomatitis was 10(5%) and angular cheilitis was least reported in our patients 6(3%). About denture

hygiene it was seen that 80(40%) patients clean their dentures regularly and 120(60%) patients do not clean their dentures or being irregular, Table I. Night wearing of the prosthesis was found in 120(60%) patients whereas 80(40%) never wear dentures while sleeping, Table I.

Regarding age of the dentures, maximum patients were using their dentures for 6 to 10 years 100(50%) and 16(8%) were using dentures for more than 15 years. We found significant difference when evaluating frequency distribution associated with lesion and age of the patients and reported that lesions were more common in age group above 50 years 150(75%) p .005 (Table II). We didn't find significant difference in gender p>0.05. Correlation of oral mucosal lesions with nocturnal use of dentures, age of prosthesis, cleaning of dentures was significant p<0.05 (Table 2).

Table I: Frequency distribution of sociodemographic variables (n=200)

Variable	n
Gender	
Male	80(40%)
Female	120(60%)
Age (years)	
> 50	50(25%)
<50	150(75%)
Denture cleaning	
Yes	64(32%)
No	136(68%)
Denture Age (years)	
<5	44(22%)
6-10	100(50%)
11-15	40(20%)
>15	16(8%)
Nocturnal denture use	
Yes	116(58%)
No	84(42%)

Table II: Correlation between lesions and demographic variables (n=200)

Demographics	No lesion	Traumatic ulcer	Denture stomatitis	Hyperplasia	Angular cheilitis	P value
Age						
<50 years	44(60%)	18(30%)	0(0.0%)	0	10%	.005
>50 years	46(29%)	72(51%)	5(5%)	18(14%)	2(1%)	
Gender						
Male	50(47%)	49(44%)	2(3%)	8(3.5%)	4(2.5%)	.432
Female	20(36.4%)	26(47.3%)	2(3.6%)	7(12.8%)	0	
Nocturnal denture use						
Yes	17(15%)	76(70%)	0(0.0%)	14(13%)	4(2%)	.000
No	32(69.6%)	8(17.4%)	3(6.5%)	3(6.5%)	0	
Denture cleaning						
Yes	70(95%)	3(3.5%)	1(1.5%)	0(0.0%)	0(0.0%)	.000
No	16(10%)	84(67%)	5(4%)	22(16%)	5(3%)	
Denture age						
<5	50(83%)	12(17%)	0	0(0.0%)	0(0.0%)	.000
6-10	40(36%)	58(50.5%)	6(6.5%)	10(7%)	0(0.0%)	
11-15	6(14%)	19(52%)	0	11(23%)	6(11%)	
>15	0	10(67%)	0	9(33%)	0(0.0%)	

DISCUSSION

Acute and chronic mucosal lesion results from patient's habits, quality and integrity of the prosthesis. It include long time use and also affects age, gender, traumatic injuries, infectious material.[15] Prevalence of mucosal lesions have been studied in various parts of the world. 4.9% to 6.4% prevalence of lesions of oral mucosa was ranging globally in general population across various countries [16-19]. Pavicic *et al.,* also found 46.3% complete denture wearers against 40.8% partial denture wearers with mucosal lesions [2]. Similarly, Another study [18] found 33.3% prevalence in complete denture and 12.2% in partial denture patients. High prevalence 59.6% was reported by Cheruvathoor

and by some other studies [8]. The possible explanation of this finding is that complete coverage of oral mucosa by complete dentures result in development of negative pressure, more salivary accumulation, less washing action of saliva and more tissue in contact with the dentures as compare to the partial ones [8,20].

The oral mucosal lesions prevalence in our study is 60% which is more than 13.5% reported by Another study [18] and coworkers, 45.6% by Pavicic [2] *et al.,* Feng [21] *et al.,* reported 10.8% prevalence among Chinese, found 31.7% in teenagers [20]. Similarly, Toum [19] and coworkers reported 61.8% Lebanese population with denture induced mucosal lesions. The difference could be due to variations in the studied population characteristics [10]. Complete denture wearers reported high rate of mucosal lesions in (maxillary complete dentures 35%, mandibular complete dentures 22% and 15% patients with complete dentures in both arches).

Loose and ill-fitting prosthesis causes traumatic ulcers resulting from continuous mucosal irritation are common. We found traumatic ulcers 47%, the most prevalent lesion caused by dentures followed by hyperplasia 13%. Angular cheilitis was few presents in our patients. Similarly, another study [18] and coworker reported traumatic ulcers to be the commonest ones 78.6% followed by hyperplasia 14.3%. In contrast, Gaur [10] and colleagues reported denture stomatitis as the most common lesion, accounting for 59.25%. Some studies have identified hyperplasia as the primary lesion associated with removable dentures [2,11], while others have found denture stomatitis to be most frequent, followed by hyperplasia and angular cheilitis [8,22]. The reason for the disparity in the results may be due to the difference in the characteristics of the studied population. [23, 24]

If patients wearing removable prosthesis at night, it results in inflammation due to the accumulation of saliva under it. We found significant relationship between nocturnal denture wearing and development of mucosal lesions. In contrast to the results of current study and coworkers reported insignificant association between them. However, in literature strong association between oral lesions and dentures nocturnal use has been seen [25,26]. Continuous negative pressure on the oral tissues under the dentures, accumulation of saliva and poor hygiene is responsible for these problems. It is documented that denture should be replaced periodically as using one for a prolong period without replacement is detrimental to mucosal health. We reported that the prevalence of lesion increases with the increase period of the same denture use and found significant association with the development of the lesions. In contrast a similar study showed opposite findings and stated less frequency of lesions seen in patients who used same denture for prolonged period of time. Another study [6] documented that the denture age has no significant relation with lesions, whereas Kossioni [8] in their respective studies reported similar results as ours. Similar were reported in a study claiming that that denture deteriorates with long term use and lesion develops as roughened surfaces of the dentures in contact with oral tissues thus accumulate plaqueand fungal infections [27]. Furthermore, continuous use of dentures affect mucosa, decrease it mechanical and microbiological resistance [25,26].

Aging of an old prosthesis becomes dirty and progressively rise the Candida Albicans and poor hygiene multiplies them thus reported with more lesions [25-27].

The prevalence of denture related oral lesions varies in different countries and they are 10.8% to 62% in range [7,8]. 10.8% Chinese population with denture induced lesions have been reported. 7.50% Brazilian prevalence was documented whereas 59.4% prevalence of mucosal lesions in India was seen where denture stomatitis was the commonest lesion [9,10]. Dundar and Iihan reported 40.7% in 60 years older patient with lesion [25]. Traumatic ulcers 29% and denture stomatitis 35.8% in Turkish patients have been reported [12]. In various studies, denture-induced mucosal lesions were the most common, accounting for approximately 45%, with ulcers comprising 19.5% and denture stomatitis 18.1%, respectively [13]. In Spain three most prevalent lesions reported were denture stomatitis 14%, 15% of traumatic ulcer and 34% of angular cheilitis [14].

Poor hygiene increases levels of Candida Albican thus resulting in lesions under dentures [25]. We found 68% patients did not clean their dentures regularly. We also found that significant relation between maintaining cleaning and oral mucosal lesions. Few other studies have reported the same findings. Mechanical irritation and infection results in lesion [23,24,26]. In our respected study more (60%) female patients were observed using dentures than males (40%). Likewise, another study reported 58.6% males in their respective study [18]. This could be due to the fact that female seek dental treatment more as they are more health and beauty conscious [22].

Furthermore, more female ratio is because hormonal disorders and pathophysiological reasons make them vulnerable to have more dental diseases [2]. However, there are few studies that reported a greater number of males having lesions as compare to females as men are at higher due to risk habits like smoking and drinking [28,29]. We however found insignificant relationship when genders were compared with lesions. Factors like age increases lesions of oral mucosa and we found significant association of denture induced oral mucosal lesions with age. Majority of the patients were above 50 years of age i.e.; 75%. Gaur [10] reported oral lesions more in age group >40 years 60.78%, whereas, daSilva9 70% patient above 40 years.

Predominance in old age was reported in other studies as well [5,28]. 22.8% in old Lebanese [20] population and 61.6% prevalence of denture induced lesions were reported in Thailand [30]. Data obtained by Utama1 showed that lesions occur in all removable dentures Denture Induced Oral Mucosal Lesions 182 P J M H S Vol. 16, No.05, May 2022 age from 26 to 80 years. Wide variation found in literature regarding prevalence of lesion in old individual from 2.47 5 to 98% [31]. This disparity in the results is due to nature of studied population, type of lesion studied. Furthermore, the lack of universally accepted classification system for oral lesions that result in increased discrepancy in result of the study [10].

In this study, Dentist can help by fabricating best quality dentures for reducing the development of oral lesions, maintaining follow up appointment in order to locate the the problems and instruct patients for denture cleaning, removing the dentures at night and routine follow up visits. The limitation of the study is that it was conducted only on patients in Uttara, Dhaka. Therefore, to generalize the results, the study should have involved more patients at different levels.

CONCLUSION

Complete or partial removable dentures with oral mucosal lesion were 60% reported in our patients and traumatic ulcers were the frequently observed lesion. Furthermore, significant association of all lesions with factors like patient's age, duration of denture use, nocturnal wearing and denture hygiene was found.

Authors/contribution: SHAR: Designed research / manuscript final reading/ Data collection,
SI: Conceived idea,
AZ: Statistical analysis,
RA: Data collection, **SS:** Manuscript writing,
NN: Literature review

Conflict of interest: Nil

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