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CORRELATION BETWEEN EPULIS FISSURATUM FORMATION AND NOCTURNAL WEAR IN CONVENTIONAL COMPLETE DENTURE WEARERS

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ABSTRACT

Objectives: To find out the correlation between formation of epulis fissuratum and nocturnal wear of dentures, in conventional complete denture wearers, in patients reporting to Prosthodontics department.

Materials and Methods: Patients wearing complete dentures for more than 6 months, having age between 50 - 70 years. Frequencies and percentages were calculated for categorical variables like age, gender, nocturnal wear, length of denture use, epulis fissuratum and location. Epulis fissuratum and location was stratified with the nocturnal wear of the denture, to see the effect modification. Post stratification was done using chi-square test keeping $P < 0.05$ as a significant level.

Results: There was a significant correlation noted between Epulis formation and nocturnal wear (P -value 0.001). 83 patients wearing complete denture, 76 (91.6%) had no epulis fissuratum and 7 (8.4%) presented with epulis fissuratum. The location of epulis fissuratum, 4 (4.8%) were found in the anterior region and 3 (3.6%) were found in the posterior region. Nocturnal wear was negative 59 (71.1%) and 24 (28.9%) was found positive among them. A significant correlation was noted P value 0.002 between location and nocturnal wear.

Conclusion: Epulis fissuratum is not a common manifestation in denture wearers. If present, it is most commonly reported in the anterior maxilla and there is a strong association between epulis formation and nocturnal wear/ length of denture use.

Key words: Complete denture wears, Epulis fissuratum, Nocturnal wear, correlation

INTRODUCTION

Prosthodontists play an important role in re-establishment of the lost dentition, which significantly impairs speech, oral functions and appearance.^{1,2} Completely edentulous elderly patient dental rehabilitation has always been challenging.³

The risk of development of oral diseases increases with increasing age. Stomatognathic system compromised negatively because of the tooth loss, subsequently leads to further disturbances. The disharmony of the system further increases, with

the prolonged use of inadequate complete dentures.⁴

Complete denture is widely used due to its cost effectiveness, but it may be associated with various complications.¹ Majority of the patients accept denture related problems as a consequence of the treatment and use those ill-fitting dentures which needs to be replaced.⁵ Problems like denture stomatitis, traumatic ulcer, residual ridge resorption, epulis fissuratum, and angular cheilitis, all arises due to prolong use of an ill fitted prosthesis.^{4,6,7}

Chronic irritation caused by the borders of the ill-fitting denture leads to the development of inflammatory hyperplastic lesion known as epulis fissuratum.^{8,9} It mostly develops on the palate and in vestibule soft tissues and between these folds lie the denture flange. It is more common in mandible as

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compared to maxilla. It mostly involves the anterior region of the jaws and females are mostly affected.¹⁰

Da Silva HF et al¹¹ noted epulis fissuratum 19.6% in farmers semi-arid northern area of Brazil. Bilhan H et al¹ reported in a study that out of 64 patients examined 4.2% had epulis fissuratum. Mubarak S et al¹² noted epulis fissuratum 41.9 %, to be the most frequent lesion among all other oral lesions 20.5% cases. Naderi NJ et al¹³ noted 15.81% patients had epulis fissuratum, and 100% of the lesion was found in the vestibular region. Atashrazm P et al⁸ reported Epulis fissuratum 16.4% in Iranian geriatric population using complete denture. Mandibular labial vestibule 79% was mostly involved as compared to maxillary labial vestibule 6%. And 91% of continuous denture wearers developed epulis fissuratum. Canger EM et al¹⁴ noted epulis fissuratum 53.5% in the mandible and 46.5 % in the maxilla and 77.5% of epulis fissuratum were in the anterior region. And 69.8% of them were related to long term use (more than 10 years) of old dentures in geriatric patients.

The rationale of this study is to report the relation between nocturnal wear of a denture and formation of epulis fissuratum, following placement of complete dentures. Since no local studies have been carried out in this respect, documentation of data would help in providing useful insight in pointing out the areas in denture bearing mucosa that are most vulnerable to these. It will also point out the culprit areas of the prosthesis they are related to this condition. It will in turn help the dental practitioners in construction of complete denture. Patient must be educated and instructed to remove the denture at night, to allow healing of the oral mucosa and decrease chances of developing the lesion.

MATERIALS AND METHODS

Descriptive, cross sectional study design was used. Data was collected at department of Prosthodontics, Khyber college of dentistry, Peshawar, from May 2019 to March 2021. The calculated sample size was 83, by WHO calculator, using 16.4% frequency of Epulis fissuratum, by a previous study⁸ at 95% confidence level and 8% margin of error. Consecutive, non-probability sampling technique was used.

Patients wearing complete dentures, both genders, having age between 50 - 70years. Wearing complete denture for more than 6 months were in-

cluded in the study. Patient with Mental or physical abnormalities, which was assessed from by history and non-complaint patients were excluded from the study.

Approval from hospital's ethical review committee was taken. Subjects were referred from OPD fulfilling the inclusion criteria were invited to participate in the study. The objectives, procedure and risks/benefits of the study were clearly explained to them. They were given assurance that their personnel data and identity would not be disclosed. After an informed consent data was collected using a structured Proforma.

Data related to age, gender, length of denture use, nocturnal denture wear, presence of epulis fissuratum, and its location were noted. The examination was carried out using mouth mirror, portable light and a spatula, by a Postgraduate trainee. Distribution and location of epulis fissuratum, in tissue underneath complete denture was recorded in a pre-structured data collection sheet (Annex II). The diagnosis of epulis fissuratum was made on clinical examination/features. Bias and confounding factors were controlled by strictly following inclusion, exclusion criteria and stratification.

Statistical analysis of the data was done using the software Statistical Package for Social Sciences (SPSS) version 20. Frequencies and percentages were calculated for categorical variable like age, gender, nocturnal wear, length of denture use, epulis fissuratum and location. Epulis fissuratum and location was stratified with the nocturnal wear of the denture, to see the effect modification. Post stratification was done using chi-square test keeping $P < 0.05$ as a significant level. All the results are presented in the form of tables and figures.

RESULT

83 patients wearing complete denture, age between 50 to 70 years, were included. Patient age was divided in four categories. While distributing the patients with regards to gender, the female gender predominated the sample (Table 1). While distributing the frequency of the epulis fissuratum, 76 (91.6%) had no epulis fissuratum and 7 (8.4%) presented with epulis fissuratum. The frequency of location of epulis fissuratum 4 (4.8%) were found in the anterior region and 3 (3.6%) were found in

the posterior region (Table 2). Nocturnal wear was negative 59(71.1%) and 24(28.9%) was found positive among them. (Table 3). While stratifying epulis fissuratum and location with regards to nocturnal wear, with significant P value .001 and .002 (Table 4).

DISCUSSION

There was a significant correlation noted between Epulis formation and nocturnal wear/length of denture use in this study i.e. p value 0.001. While distributing the frequency of the epulis fissuratum, 76 (91.6%) had no epulis fissuratum and 7 (8.4%) presented with epulis fissuratum. The frequency of location of epulis fissuratum 4 (4.8%) were found in the anterior region and 3 (3.6%) were found in the posterior region (Table 2). While stratifying epulis fissuratum and location with regards to nocturnal

wear/length of denture use, with significant P value .001 and .002 (Table 4)

In our study we noted 8.4% of epulis fissuratum in complete denture wearers. Dweiri et al¹⁵ study reported the presence of epulis fissuratum 23.1% in females and 18.6% in males. On contrary Bataineh A et al¹⁶ results found that both genders were equally involved. The higher percentage of females having epulis fissuratum can be due to the reason that females are more aesthetically conscious as compared to males and desired to obtain dental treatment more often¹⁷⁻²⁴. Xerostomia in elderly patients render the oral mucosa to be more prone to inflammatory or hyperplastic changes.²⁵

Canger et al and Dweiri et al reported that the percentage of epulis fissuratum in mandible was more as compared to maxilla^{14,15}. Where Buchner et al and Bataineh et al reported that both jaws were equally affected^{16,26} On contrary to our study where anterior maxilla 4.8% was the most frequently affected site. A statistically significant correlation was found between epulis location and length of denture use/nocturnal wear. Epulis fissuratum tends to be more frequent in the maxilla²⁷⁻³¹. Dweiri et al¹⁵ reported the lower labial sulcus to be the most affected site in his study. Our study results were in accordance

Table 1: Frequency and percentage of age and gender of the participants

	Age of participants		Gender		
	N	%		N	%
50-55	17	20.5	F	47	56.6
56-60	17	20.5	M	36	43.4
61-65	29	34.9	Total	83	100
66-70	20	24.1			
Total	83	100			

Table 2: Frequency and percentage of Epulis and its location in maxilla

	Epulis		Location		
	N	%		N	%
No	76	91.6	Absent	76	91.6
Yes	7	8.4	Anterior	4	4.8
Total	83	100.0	Posterior	3	3.6
			Total	83	100.0

Table 3: Frequency and percentage of length of denture wear and nocturnal wear

	Nocturnal Wear		Length		
	N	%		N	%
No	59	71.1	<1 year	22	26.5
Yes	24	28.9	1 -5 years	40	48.2
Total	83	100	> 5 years	21	25.3
			Total	83	100

Table 4: Cross tabulation of nocturnal wear, epulis fissuratum and location of epulis fissuratum

Nocturnal wear	Epulis fissuratum			Total	P-value
	No	Yes			
No	58	1		59 (71.1%)	0.001
Yes	18	6		24 (28.9%)	
Total	76 (91.6%)	7 (8.4%)		83 (100%)	
Nocturnal wear	Location of Epulis fissuratum			Total	P-value
	No	Anterior	Posterior		
No	58	0	1	59 (71.1%)	0.002
Yes	18	4	2	24 (28.9%)	
Total	76 (91.6%)	4 (4.8%)	3 (3.6%)	83 (100%)	

Pearson Chi-Square test

with the other studies, which reported that anterior portion of the jaws were frequently involved.^{14, 32-34}

Although epulis fissuratum, can occur in any age group, in our study it was noticed among 61-65 years old patients (fifth decade). It is interesting that Dweiri, Coelho, Buchner, and Bataineh et al^{15,16,35,36} also reported it to be in the fourth, fifth and sixth decades, because of the association of the epulis fissuratum formation with patient's age. Length of denture wear is directly proportional to patient age that is why epulis fissuratum is more common in older patient using ill-fitting denture for a longer time.

Length of denture wear plays a crucial role epulis formation. Dundar and Kal³⁷ found epulis fissuratum to be more common in patients who have been using the complete denture for last 20 years or above. reported that the incidence of oral mucosal lesions (including epulis fissuratum) was higher in individuals who had used their dentures for more than 20 years. In the current study, 33.3% of the patients who had been using complete denture for 5 years developed epulis fissuratum. Nocturnal wear and increased length of denture use were the possible reasons, for the formation of epulis fissuratum.

Statistically significant correlation i.e. $p=0.001$ was found between epulis formation and nocturnal wear. Atashrazm P et al³⁸ findings were in accordance with our study with $p<0.05$. On the contrary Canger et al¹⁴ reported no correlation between epulis fissuratum formation and denture wear with p value more than 0.05 (not significant). Whereas Mubarak et al¹² study results were in accordance with our study, they also reported a statistically significant correlation with p value 0.023.

We recommend that prosthodontist should strictly follow the principles of complete denture construction. Regular dental check-ups should be planned and followed after the delivery of the complete denture. Patient must be properly instructed about the cleaning of denture and giving the oral cavity denture relief specifically at night. We recommend further studies in this regard to draw future recommendations.

CONCLUSION

Epulis fissuratum is not a common manifestation in denture wearers. If present, it is most commonly reported in the anterior maxilla and there is a strong

association between epulis formation and nocturnal wear/ length of denture use.

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