

## FREQUENCY OF DENTURE INDUCED FIBROUS HYPERPLASIA IN REMOVABLE DENTURE WEARERS

Awais Khan<sup>1</sup>, Muneer Khan<sup>2</sup>, Syed Muhammad Awais<sup>3</sup>, Sana Ahmad<sup>4</sup>

<sup>1</sup> Department of Prosthodontics, Bacha Khan Dental College

<sup>2</sup> Department of Dental Materials, Bacha Khan Dental College

<sup>3</sup> Department of Oral Pathology, Bacha Khan Dental College

### Abstract

**Objectives:** The objective of this study was to determine the frequency of denture induced fibrous hyperplasia in patients reporting to Bacha Khan Medical College, Mardan.

**Materials & Methods:** The descriptive, cross sectional study was conducted on 95 adult patients of age 40 and above. Adult patients with age  $\geq 40$  years, removable partial/complete denture wearers for more than 1 year were included in this study. Edentulous patients without prosthesis, mentally retarded and wearing implant supported removable prosthesis were excluded. Data related to age, gender, type of denture (removable partial or complete), length of denture use, hygiene care, nocturnal denture wear, presence of Denture induced fibrous hyperplasia were noted. Descriptive statistics were calculated for all variables. Post-stratification was determined using chi-square test.  $P < 0.05$  was considered significant.

**Results:** The mean age was  $66.75 \pm 10.16$  years. Complete denture wearers 50 (52.6%) were more than RPD wearers 45 (47.4%). The frequency of denture induced fibrous hyperplasia among removable denture wearers were 55.8%. The difference of denture induced fibrous hyperplasia among various ages was statistically significant ( $P < 0.05$ ).

**Conclusion:** Denture induced hyperplasia is common manifestation in removable denture wearers and more common in old ages and nocturnal wears. So it the utmost responsibility of the clinicians to give proper instruction to their patients about denture care and regular follow up.

**Key Words:** Denture induced fibrous hyperplasia, removable denture, complications of dentures, removable prosthesis

### Introduction

Edentulism has a correlation with self-esteem and quality of life especially in adults<sup>1</sup>. Tooth loss is associated with impaired function, aesthetics and speech which can be restored in most of the cases with dentures<sup>2</sup>. The role of a Prosthodontist is not only the replacement of missing teeth. Post insertion period of removable dentures is very essential for the treatment success as patients face many troubles to adapt<sup>3</sup>.

Fabrication of denture involve many steps that necessitates multiple visits by the patient for numerous clinical and laboratory procedures<sup>4,5</sup>. Construction faults can occurs in these procedures lead to various complications such as poor retention and stability, ulcers in denture supporting mucosa, fracture at tooth and denture base interface or at the denture base, difficulty in phonation, denture induced stomatitis, denture related fibrous hyperplasia and other sort of mucosal injuries<sup>2</sup>.

Denture induced fibrous hyperplasia (DIFH) has many names for instance granuloma fissuratum, inflammatory fibrous hyperplasia and denture epulis. It is reactive, fibrous connective tissue lesion of oral mucosa due to ill fitting denture. It is due to reaction

---

#### Correspondence:

**Dr. Awais Khan**

Lecturer

Department of Prosthodontics, Bacha Khan Dental College  
Mardan, Khyber Pakhtunkhwa, Pakistan

Cell # 03439237748

E-mail: drawaiskhanked@gmail.com

of the tissue to an ill-fitting denture for long time. DIFH is not malignant pathology but obstruct with denture placement for the patients<sup>6,7</sup>. DIFH found near to the denture flange, and is more frequent in the upper buccal vestibules. The clinical appearance of DIFH can be pedunculated, sessile or nodular formations; solitary or many can be red, hyperemic or light pink, generally being symptomless<sup>8</sup>.

Ferreira RC et al reported DIFH in 12.8% among the institutionalized elderly patients in Brazil<sup>9</sup>. Atashrazm P et al. conducted a study in group of Iranian dependent elderly complete denture wearers and reported 16.4% having DIFH<sup>10</sup>. In another study Da Silva HF et al reported DIFH 19.6% in farmers semi-arid northern area of Brazil<sup>1</sup>.

This study was aimed to report the frequency of denture induced fibrous hyperplasia following placement of removable prosthesis in patients reporting to Bacha Khan Medical College, Mardan. 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 as well as the areas of the prosthesis they are related to. Dissemination of this information will also facilitate education of dental practitioners in constructing conventional complete dentures and for provision of diagnostic information of the culprit areas involved and thus shall improve patients comfort and reinforce the patients trust in the care provider.

## Materials and Methods

The descriptive, cross sectional study was conducted at the department of Prosthodontics, Bacha Khan Medical College Mardan from April 2016 to December 2016. Sample Size was 95 patients keeping 19.6% 1 Proportion of denture induced fibrous hyperplasia, 95% Confidence Interval and 8% Margin using WHO software. Sample was selected by consecutive, non-probability technique.

Approval of the hospital ethical committee was taken. Subjects fulfilling the inclusion and exclusion criteria were invited to take part in the study. The purpose, procedures, and benefits of the study were explained to them. A verbal informed consent was taken.

Adult patients with age  $\geq$  40 years, removable partial/complete denture wearers for more than 1

year were included in this study. Edentulous patients without prosthesis, mentally retarded patients and patient wearing implant supported removable prosthesis were excluded.

Data related to age, gender, type of denture (removable partial or complete), length of denture use, hygiene care, nocturnal denture wear, presence of DIFH were noted. The examination were carried out by a trained examiner using wooden spatula, portable light and a mouth mirror. The diagnosis of DIFH was made based on the clinical features. It was recorded according to Neveille et al<sup>11</sup>: oral mucosa which is closely related to denture flange or other denture bearing areas, which is folded, redundant, firm and fibrous in consistency; or erythematous and ulcerated in appearance. Leaf like and pedunculated mass in case of palatal area.

Statistical analysis was done using the SPSS version 20.0. Descriptive statistics such as frequencies, percentages were calculated for variables like gender, type of denture, denture hygiene care, nocturnal denture wear and the denture induced fibrous hyperplasia. Mean and standard deviation were calculated for numerical variables like age. Post-stratification of DIFH was done for gender, age group, denture hygiene, nocturnal use by applying chi-square test.  $P < 0.05$  was set as a significant level.

## Results

The age ranged from 41 to 90 years and the mean age was  $66.75 \pm 10.16$  years. The male gender predominated the study sample ( $n=56$ , 58.9%). The females were 39 (41.1%). Complete denture wearers 50 (52.6%) were more than RPD wearers 45 (47.4%). Forty-two participants (44.2%) were using removable partial denture and 53 (55.8%) had removable complete denture. The frequency of length of denture use showed that the less than 5 years denture wears ( $n=55$ , 52.6%) were more than  $>5$  years denture wears ( $n=45$ , 47.4%). Only 61 (64.2%) removable denture wearers had adequate denture hygiene. Most of the patients used the denture during night time ( $n=72$ , 75.8%).

The most common age group was 61-70 years ( $n=49$ , 51.6%) followed by 51-60 years ( $n=24$ , 25.3%) and 81-90 years ( $n=11$ , 11.6%). The details of age groups pattern are depicted in the table 1. The frequency of denture induced fibrous hyperplasia

among removable denture wearers were 55.8%. (Table 2)

Denture induced fibrous hyperplasia was common in age group 61-70 (n=31, 32.4%) followed by 81-90(n=11, 11.58%). The difference among various ages was statistically significant (P<0.05). (Table 3) Denture induced hyperplasia was more in < 5 years (n=34, 36.84%) wears than >5 years wears (n=19, 20%). This was statistically significant (P<0.05) (Table 4). The effect of denture hygiene on incidence of denture induced fibrous hyperplasia was not statistically significant (P>0.05) (Table 5). Those patients who used denture during night were significantly (P<0.05) more affected than by DIFH non-nocturnal wearers (n=36, 37.89%). (Table 6).

**Table 1: Age distribution of the participants (n=95)**

Age Group (years)	Frequency (n)	Percent(%)
40-50	2	2.1
51-60	24	25.3
61-70	49	51.6
71-80	9	9.5
81-90	11	11.6
Total	95	100.0

**Table 2: Frequency of denture induced fibrous hyperplasia (n=95)**

Fibrous Hyperplasia	Frequency (n)	Percent (%)
Yes	53	55.8
No	42	44.2
Total	95	100.0
Total	95	100.0

**Table 3: Frequency of denture induced fibrous hyperplasia stratified by age group**

Age Group (years)	Denture Induced Fibrous Hyperplasia		Total
	Yes	No	
40-50	0(0%)	2(2.105%)	2(2.105%)
51-60	2(2.105%)	22(23.16%)	24(25.265)
61-70	31(32.63%)	18(18.95%)	49(51.57%)
71-80	9(9.474%)	0(0%)	9(9.474%)
81-90	11(11.58%)	0(0%)	11(11.58%)
Total	53(55.79%)	42(44.21%)	95(100%)

Chi-Square test=41.397, df=4, p value=0.000

**Table 4: Frequency of Denture induced fibrous hyperplasia stratified by length of denture use**

Length of denture use	Denture Induced Fibrous Hyperplasia		Total
	Yes	No	
< 5years	34(36.84%)	16(16.84%)	50(52.63%)
>5years	19(20%)	26(27.36%)	45(47.3%)
Total	53(55.78%)	42(44.21%)	95(100%)

Chi-Square test=6.381, df=1, p value=0.014

**Table 5: Frequency of denture induced fibrous hyperplasia stratified by denture hygiene**

Denture Hygiene	Denture Induced Fibrous Hyperplasia		Total
	Yes	No	
Yes	37(38.94%)	24(25.26%)	61(64.21%)
No	16(%)	18(18.84%)	34(35.74%)
Total	53(%)	42(44.21%)	95(100%)

Chi-Square test=1.636a, df=1, p value=0.144

**Table 6: Frequency of Denture induced fibrous hyperplasia stratified by nocturnal wear**

Nocturnal wear	Denture Induced Fibrous Hyperplasia		Total
	Yes	No	
Yes	36(37.89%)	36(37.89%)	72(75.78%)
No	17(17.89%)	6(6.13%)	23(24.21%)
Total	53(55.78%)	42(44.21%)	95(100%)

Chi-Square test=4.041, df=1, p value=0.037

## Discussion

In this study all those patients presenting to Bacha Khan Medical College, Mardan and who had used removable dentures more than 1 year were evaluated to determine the frequency of denture induced hyperplasia. Timeline more than one year was chosen so that the denture had adequate time in the mouth. Many patients are not wearing removable dentures after few months of provision due to their inadaptability, low masticatory efficiency and lack of stability. These either remain edentulous or sort for implant supported prosthesis<sup>11</sup>. So, if patient had a history of one year denture use, it will be likely that he/she wear it regularly.

In present study the age was ranging from 41 to 90 years and the mean age was 66.75±10.16 years.

As we have included patients who had used denture more 5 years; so this shows that in our population due to lack awareness about oral health and preventive dentistry, tooth loss occurs at earlier ages. It can also be concluded that the DIFH occurred in above age 40 years patients in this sample. Similar results have been reported by long term study 1979 to 2001 in a Brazilian population by Firoozmand et al<sup>12</sup>.

The current results shows that the complete denture wearers (55.8%) were more than RPD(44.2%). This may be because of that many individuals preferred fixed partial dentures, and other remained partially edentulous without resorting to replacement with artificial teeth.

The present study showed that the frequency of length of denture use showed that the less than 5 years denture wears (52.6%) were more than >5 years denture wears (47.4%). This shows that DIFH can occurs very early after denture provision so regular follow up of edentulous patients wearing removable denture is required. Similar results were reported by others<sup>7</sup>.

The frequency of denture induced fibrous hyperplasia among removable denture wearers was 55.8% in this study. This shows that more than half of the patients were affected by this condition. This prevalence of DIFH in our population is much higher than international studies<sup>13-15</sup>. This may be due to the of lack awareness among denture wearers and not giving proper instructions by their clinicians for denture hygiene.

Dweiri et al. reported that prevalence of denture fissuratum in the Northern Jordanian Population was 20.2%<sup>12</sup>. The less of DIFH in the Northern Jordanian Population may due to regular follow up and more awareness among their patients. The genetic and ethnic factors may be other reason for dissimilarities.

In our study DIFH was more common in old ages and these differences among age were statistically significantly ( $P < 0.05$ ). In old ages patients usually have many other diseases and considered oral care as a secondary issue. Geriatric patients lack muscular strength cannot clean their denture significantly. Similar findings were reported by Mubarak et al<sup>16</sup>.

The DIFH was significantly more in the patients who used denture during night. Dentures are needed to be removed during night to allow the oral mucosa

to heal. Denture should be placed in disinfectant to kill microorganisms which are responsible for DIFH. da Silva et al<sup>1</sup>. in a study on Brazilian population reported similar results to our one.

## Conclusion

The findings of this study showed that denture induced hyperplasia is common manifestation in removable denture wearers and more common in old ages and nocturnal wears. So it the utmost responsibility of the clinicians to give proper instruction to their patients about denture care and regular follow up.

## References

1. da Silva H-F, Paulo-Ricardo-Saquete Martins-Filho M, Piva R. Denture-related oral mucosal lesions among farmers in a semi-arid Northeastern Region of Brazil. *Oral Pathol Oral Cir Bucal* 2011;40(1):740-4.
2. Bilhan H, Geckili O, Ergin S, Erdogan O, Ates G. Evaluation of satisfaction and complications in patients with existing complete dentures. *J Oral Sci.* 2013;55(1):29-37.
3. Jaramillo JA, Jaramillo F, Kador I, Masuoka D, Tong L, Ahn C, et al. A comparative study of oral health attitudes and behavior using the Hiroshima University-Dental Behavioral Inventory (HU-DBI) between dental and civil engineering students in Colombia. *J Oral Sci* 2013;55(1):23-8.
4. Bilhan H, Erdogan O, Ergin S, Celik M, Ates G, Geckili O. Complication rates and patient satisfaction with removable dentures. *J Advanc Prosthodont.* 2012;4(2):109-15.
5. Hannah VE, O'Donnell L, Robertson D, Ramage G. Denture Stomatitis: Causes, Cures and Prevention. *Prim Dent J.* 2017;6(4):46-51.
6. Kiuchi M, Yamamura T, Okudera M, Souksavanh V, Ishigami T, Iwase T, et al. An assessment of mast cells and myofibroblasts in denture-induced fibrous hyperplasia. *J Oral Pathol Med.* 2014;43(1):53-60.
7. Zoubi ZA, Khresat IS, Omor RA, Arabeyat MA, Ajarmeh MS. Frequency of denture induced fibrous hyperplasia among a sample of jordanian royal medical services dental patients *Pak Oral Dent J.* 2013;33(2): 397-400.
8. Preoteasa E, Preoteasa CT, Iosif L, Catalina Magureanu M. Denture and Overdenture Complications In: Virdi MS, editor. *Emerging Trends in Oral Health Sciences and Dentistry* 6th ed: Intech publish; 2015. p. 193-225.
9. Ferreira RC, Magalhães CSd, Moreira AN. Oral mucosal alterations among the institutionalized elderly in Brazil. *Braz Oral Res.* 2010;24(3):296-302.

10. Atashrazm P, Sadri D. Prevalence of oral mucosal lesions in a group of Iranian dependent elderly complete denture wearers. *J Contemp Dent Pract.* 2013;14(2):174-8.
11. Mazurat NM, Mazurat RD. Discuss Before Fabricating: Communicating the Realities of Partial Denture Therapy. Part I: Patient Expectations. *J Can Dent Assoc.* 2003;69(2):90-4.
12. Firoozmand LM, Almeida JD, Cabral LAG. Study of denture-induced fibrous hyperplasia cases diagnosed from 1979 to 2001. *Quintess Int.* 2005;36(10):825-9.
13. Dweiri AT, Alawneh A. The effect of age and gender on the prevalence of denture fissuratum among complete denture wearers in the Northern Jordanian Population-A Prospective Study. *Pak Oral Dent J.* 2012;32(2):344-48.
14. Bataineh A, Al-Dwairi Z. A survey of localized lesions of oral tissues: a clinicopathological study. *J Contemp Dent Pract.* 2005;6(3):30-9.
15. Coelho CMP, Zucoloto S, Lopes RA. Denture-induced fibrous inflammatory hyperplasia: a retrospective study in a school of dentistry. *Int J Prosthodont.* 2000;13(2):148-51.