

FREQUENCY OF TRAUMATIC ULCERATION IN TISSUES UNDERNEATH NEW CONVENTIONAL COMPLETE DENTURES

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ABSTRACT

Objective: To determine the frequency of traumatic ulceration in denture supporting tissues following the provision of new complete dentures.

Materials and Methods: This cross-sectional descriptive study was performed at the Prosthodontics Department of Khyber College of Dentistry, Peshawar over a period of 18 months. With the method of history and clinical examination and using a structured data collection sheet presence of traumatic ulcers in tissues underneath conventional complete dentures was recorded in 184 patients fulfilling the inclusion and exclusion criteria and who had not been previously wearing CD in both jaws. Patients were examined 3 to 4 days following the placement of their complete dentures, on their first recall appointment, for the presence of traumatic ulceration.

Results: Patients (N=184) had mean age of 55.85 ± 2.22 (SD) years with male to female ratio of 1:1.9. Patients returning with one or more traumatic ulcers 3 to 4 days following the placement of their complete dentures were 141 (76.6%) while 43 (23.4%) patients developed no ulcers. Ulcers were more commonly found in older age groups and in females.

Conclusion: Traumatic ulcers were reported in majority of the patients who received conventional complete dentures. Thus the role of a prosthodontist does not end with the placement of the prosthesis. Regular follow up visits and adjustments need to be carried out following placement of complete dentures to ensure patient comfort and acceptance of the prosthesis.

Keywords: Traumatic ulcer, conventional complete denture, post insertion

INTRODUCTION

According to the Glossary of Prosthodontic Terms (GPT-8) "Complete Edentulism" is a state of someone being without teeth and is normally observed in geriatric patients. Edentulism is important as a correlate of self esteem and quality of life in regarding to older adults.^{1,2} Loss of dentition significantly impairs appearance, speech and oral functions, consequently prosthodontists are vital in

re-establishing dentition.³ In our locality the most common treatment modality given to such patients is the provision of conventional complete dentures. The role of a prosthodontist, however does not end with the placement of a set of complete dentures in an edentulous patient.⁴ The post insertion period of complete dentures is critical to the success of the treatment since patients face many problems in adapting to and in accepting newly provided dentures.⁵ It has also been reported that older patients face an even greater challenge in managing and accustoming to conventional removable prosthesis.^{6,7}

Although complete denture provision is a relatively less costly and widely used treatment modality

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for edentulous patients, their construction is a multi step process that requires numerous visits by the patient along with several clinical and laboratory procedures.^{3,8,9,10,11} It is thus very prone to construction faults resulting in various complications such as poor retention and stability, ulcerations in denture supporting tissues, fracture of denture teeth or the denture base, speech difficulties, denture related stomatitis and other mucosal injuries.^{3,12,13,14}

Traumatic ulcers associated with removable complete denture wearing are the most common complications faced by the patient.¹⁵ Bilhan et al reported in a study that out of 64 patients examined the most common complications recorded were poor retention 85.9% followed by ulceration 44.2%.³ A study done in Mashhad Dental School showed that 37.5% patients complained of pain and discomfort due to traumatic ulceration after placement of removable prosthesis within one year.⁶ Brunello and Mandikos reported in their study that among 100 patients the most common complaint after insertion of a freshly constructed complete denture was soreness and uneasiness due to traumatic ulcers and mucosal injuries.¹⁶ In a study it was found that out of 122 patients treated with complete dentures, 106 (87%) returned with minor or severe lesions of oral mucosa.¹⁷ Sadr and Mehboob reported that out of 60 edentulous patients a total of 85.8%, required adjustments in their first follow up visit because of mucosal injuries, 71.7% of the maxillary dentures while 100% of mandibular dentures required adjustments.⁵ Overextension of flanges, inadequate adaptation of the fitting surface of dentures, denture base irregularities, the presence of tissue undercuts and immature occlusal contacts are common causes of such mucosal injuries.⁵ With such ulcers patients complain of pain. Patients may cease wearing their prosthesis and lose confidence in his or her dentist.¹⁷

The purpose of this study is to report the frequency of ulcers in patients who return with the complaint of pain following placement of new complete dentures.

MATERIALS AND METHODS

This cross-sectional descriptive study was performed at the Prosthodontics Department of Khyber College of Dentistry, Peshawar over a period of 18 months. A sample size of 184 was calculated using the results of a study carried out by Kivovics et al of

87% at a 5% confidence interval.¹⁷ Adults of both genders in the age range of 50-60 years, having received new conventional complete dentures in both arches and denture wearing history of less than a week, were included in this study. All dentures were made by Post Graduate trainees using the same steps of fabrication and the same materials for fabrication. After gaining an informed consent data was collected using a structured Performa. After recording the personal data, the nature of the patient's complaint and the relevant history intra oral examination was performed. The complete denture was evaluated outside the mouth and inside the patient's mouth.

Statistical analysis of the data was done using the software Statistical Package for Social Sciences (SPSS version 20.0) using an IBM compatible computer. Frequency and percentages was calculated for categorical variables like gender and traumatic ulcer. Mean + SD was calculated for numerical variables like age. Traumatic ulcers were stratified with age and gender to see the effect modification. Post stratification was applied through chi-square test keeping p value ≤ 0.05 to be significant.

RESULTS

In this study 184 patients were included. The mean age was 55.85 years with SD +2.22 years. 42 (22.8%) subjects belonged to the age bracket of 50-53 years old. Majority of the patients belonged to the bracket of 54-57 years i.e. 98 subjects (53.3%). The remaining 44 subjects (23.9%) were in the age bracket of 58-60 years old. (Figure 1)

Out of the 184 edentulous patients that underwent complete denture treatment and returned for their first recall appointment, majority of the subjects were females, accounting for 65.8% (121 subjects) of the total patients. The remaining 34.2% (63 subjects) of the patients were males as shown in figure 2. Male to female ratio was 1:1.9.

Out of these 184 patients 141 subjects (76.63%) returned with single or multiple traumatic ulcers in one or both arches while 43 subjects (23.3%) returned with no traumatic ulcer in the tissues beneath conventional complete denture within a period of three to four days of placement of the prosthesis. (Table 1)

In terms of age traumatic ulcers were most prevalent in the age group of 54-57 years old, with

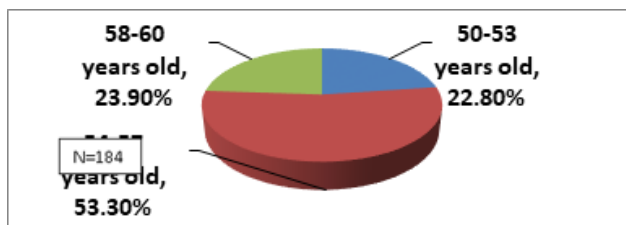


FIG 1: AGE DISTRIBUTION

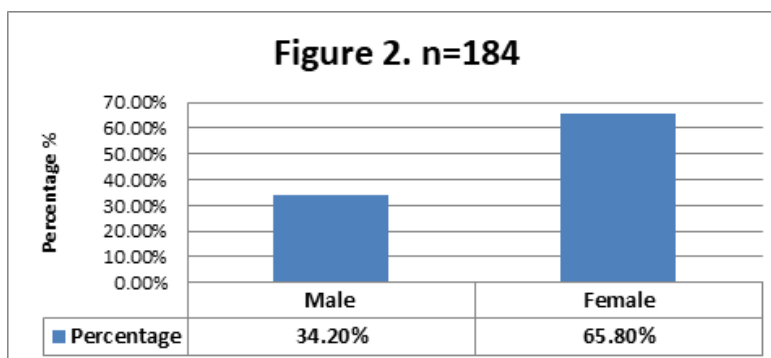


FIG 2: GENDER DISTRIBUTION

Table 1: Frequency of traumatic ulcers

Serial number	Traumatic Ulcer	Number of subjects	Percentage
1	Absent	43	23.4%
2	Present	141	76.6%
3	Total	184	100%

Table 2: Distribution of traumatic ulcers with respect to age

Age Brackets	Traumatic Ulcers						Percentage
	Absent			Present			
	Count	% of absence among all subjects	% of absence among each age bracket	Count	% of presence among all subjects	% of presence among each age bracket	0.012
50-53 years	17	39.5%	40.5%	25	17.7%	59.5%	
54-57 years	18	41.9%	18.4%	80	56.7%	81.6%	
58-60 years	8	18.6%	18.2%	36	25.5%	81.8%	

Table 3: Distribution of traumatic ulcers with respect to gender

Gender	Traumatic Ulcers						P Value
	Absent			Present			
	Count	% of absence among all subjects	% of absence among each gender	Count	% of presence among all subjects	% of presence among each gender	0.000
Male	25	58.1%	39.7%	38	27%	60.3%	
Female	18	41.9%	14.9%	103	73%	85.1%	

80 subjects returning with traumatic ulcers, making up for 56.7% of patients with the lesion. But within an age group, patients in the age bracket of 58-60 years old returned with most traumatic ulcers, with 81.8% of the subjects from this age group returning with traumatic ulcers.

The data in table 2 gives statistical analysis using chi square test of distribution of traumatic ulcer with respect to age. Significant relationship was found between age and traumatic ulcer. (P value for traumatic ulcer 0.012)

In terms of gender traumatic ulcers were more commonly found in females. 103 female subjects returned with traumatic ulcers which accounts for 73% of the subjects that developed the lesion. 85.8% of the females who received complete denture treatment developed traumatic ulcers, as shown in table 3.

The data in table 3 gives statistical analysis using chi square test of distribution of traumatic ulcer with respect to gender. Significant relationship was found between gender and traumatic ulcer. (P value for traumatic ulcer 0.000)

DISCUSSION

Edentulism is important as a correlate of self esteem and quality of life in regarding to older adults. Loss of dentition significantly impairs appearance, speech and oral functions, consequently prosthodontists are vital in re-establishing dentition.

Conventional complete dentures have become the most common treatment modality in our locality after a patient becomes completely edentulous. Traumatic ulcers associated with removable complete denture wearing are the most common complications faced by the patient.

The presenting mean age of the reporting subjects of 55.85 years with SD + 2.22 years is found similar to another study.⁵ Largest proportion (77.2%) of the patients were in the age bracket of 54-60 years. This means that with an increase in age, the number of patients requiring complete denture treatment also rises.

The results of this study shows that more females were edentulous and required complete denture therapy, which is consistent with a similar study carried out by Kivovics et al.¹⁷ The large proportion of females resulting edentulous between the age of

50 and 60 years old may be due to cultural values imposing restriction on free movement of females causing a hindrance in seeking appropriate dental care which has also been pointed out in another study by Ojanuga.¹⁸

The frequency of traumatic ulcers in tissues underneath conventional complete dentures (76.63%) is not consistent with similar studies carried out by Kivovics et al. (87%) and Sadr et al. (85.8%).^{5,17} This may be accounted to the difference in mean age of the subjects (69+8years), the sample size and the use of previous dentures in the study carried out by Kivovics et al.¹⁷ In this study all edentulous patients were medically fit and reported for conventional complete denture treatment for the first time which could be a reason for the relatively lower observation of traumatic ulcers. Cordova et al, in a similar study, reported that 60.8% of the denture wearers required adjustments due to traumatic lesions at the first recall visit.¹⁹ This discrepancy can be explained because fewer mandibular dentures were observed in this study and traumatic ulcers occur more frequently underneath mandibular complete dentures.

There is an increase in the number of patients developing traumatic ulcers with an increase in age with 81.8% of the patients in the age bracket of 58-60 years old reporting with this lesion. This is similar to another study where age was a determining factor of denture related oral mucosal lesions with patients having traumatic ulcers being significantly older than the one who did not have this lesion.²⁰ In the current study, a significant relationship was found between age and traumatic ulcer with a P value of 0.012. As age increases there is an increased risk of systemic diseases as in old age dietary habits change which results in deficiency of many necessary vitamins and nutritional demands. Inflammatory tissue changes in the mouth of an edentulous patient have been hypothesized to have a detrimental effect on denture supporting mucosal health and underlying basal structures.

In terms of gender, a significant relationship was found between gender and traumatic ulcers, more females reported with traumatic ulcers with 85.1% of the females developing traumatic ulcers after conventional complete denture therapy. This is not consistent with other studies.^{5,17} Kivovics et al.¹⁷ reported a greater frequency of ulcerations

in men while Sadr et al.⁵ observed no significant difference in the number of ulcers between men and women. The consumption of hard food by males was hypothesized as the reason for more males developing traumatic ulcers according to Kivovics.¹⁷ This discrepancy can be explained by the difference in ratios of males to females in this study, where a major portion of the sample was comprised of females compared to another study.⁵ The larger number of females can be attributed to the fact that the female sex has a greater predisposition to bone loss in residual ridges. Moreover, the females in the study were past the normal menopausal age. Menopause affects the jaws resulting in greater residual ridge resorption. Xie et al.²¹ also found females have more residual ridge resorption compared to males. With highly resorbed ridges dentures require greater extensions and may result in more ulcerations.

CONCLUSIONS

The percentage of patients returning with single or multiple traumatic ulcers in one or both arches within a period of three to four days of placement of the prosthesis was 76.63%. The frequency of traumatic ulcers rises with an increase in age, thus older edentulous patients must be dealt with more carefully. Traumatic ulcers with the use of new conventional complete dentures were found more commonly in females. More residual ridge resorption is suspected in female edentulous patients, therefore any preprosthetic measures and thorough planning must be contemplated in detail. Thus the role of a prosthodontist does not end with the placement of the prosthesis. Regular follow up visits and adjustments need to be carried out following placement of complete dentures to ensure patient comfort and acceptance of the prosthesis.

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