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Denture Induced Traumatic Ulcer - A Survey on Dental Patients in Naogaon District, Bangladesh

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Abstract | **Original Research Article**

Background: Denture-induced traumatic ulcers are common complications after denture insertion, leading to pain, discomfort, and impaired function. Their occurrence varies with patient-related factors such as age and gender, as well as denture design and fit. Understanding these associations is essential for improving prosthetic care and patient satisfaction. The aim of this study was to evaluate the denture induced traumatic oral ulcers after denture insertion and find out the relation with age, gender and jaw type. ***Methods:*** This cross-sectional observational study conducted from 15th June 2025 till 14th September 2025 in different dental clinics at Naogaon District, Bangladesh. A sample of 200 denture patients were clinically checked for traumatic ulcer development after insertion of denture. The location sites were noted in both arches. Denture surfaces were checked to find out the denture problems caused by ulcers. ***Results:*** Out of total 200 patients 40% with oral ulcers were males and 60% were female. 55-85 years old age group reported with common ulcers 51.5%. Commonly found oral ulcer site in maxilla was sulci 12% and in mandibular ridge 26%. Commonly observed denture problem responsible for ulcer formation was denture surface roughness 49%. Associated with age, gender and arch jaw was significant; $p<0.05$. ***Conclusion:*** Mandibular area are more common for traumatic ulcer and the commonest sites of ulcer developments are the ridges and sulci. Female patients and old patients are seen in ulcer development.

Keywords: Partial dentures, Complete dentures, Mandibular jaw, Maxillary jaw, oral mucosal ulcers, traumatic ulcers, denture roughness, patients complain.

INTRODUCTION

Some patient loses partialy and all his teeth when age increases, as a result patient suffers masticatory difficulties, disturbs nutritional requirements of an individual and suffers on mental health and social status [1]. Any dental treatment in this situation is still challenging for dental professionals [1, 2]. Edentulism prevalence shows variation in different parts of the world due to certain factors like education, life style and attitude towards oral care [3]. The treatment of partial and complete edentulus mouth is successfully done by removable partial and complete denture that are cost effective and improve patient's life quality [4]. The dentures when inserted needs special post insertion care. Post insertion period is important for dentures adjusted in oral cavity can result in ulcerative lesions, trauma, appearance of erythema [5]. This problem may arise because newly inserted denture shows some fabrication faults like rough areas, irregular denture base, faulty occlusion like high spots over extension. Defects of denture bases frequently occurs while denture processing. Irregular denture bases with over extending margin, failure to create balanced occlusions or lack of denture relief over sharp bony areas are few common reasons for ulcers [5-7].

Xeriatic patients shows various problems such as nutritional defficiency, compromise tissue health, poor compliance of patient and can effect the adaptation of dentures to base [22]. Oral mucosal thickness may decreases with increasing age. Oral mucosal cushion decreases and ongoing resorption result in prominence of sharp bony ridges [8,9]. The supporting tissues underneath the dentures is affected. Denture insertion should be carried out for assessing the denture

acceptance by the patient and observe the tissue adaptation [8,9].

Rough denture flange causes sore spots and traumatic ulcers and tissue adaptation of the denture when failed then patient reject the prosthesis [10]. It has been seen that if patient not satisfy with dentures and food avoidance is directly associated with oral health of an edentulous patient. It is very important to find out the ulcerative sites in oral cavity and some steps can be taken to locate the denture problems, as a result it improves patients food habits, pshycology and the quality of life become improves [10].

Many journal has many articles in the world regarding the traumatic ulcer. Age and gender could influence the prevalence rate. The denture fabrication faults could affect the adaptation process of dentures to underlying tissues. In addition, the variation of traumatic ulcers has been significantly described according to race and ethnicity [11]. Very less literature is available on such topics in our region. So, the purpose of the study was to evaluate the frequency of common location of traumatic ulcers after denture insertion and its association with age and gender.

METHODOLOGY

This is a cross sectional study. The study was include 200 patients of both gender. Patient visited different dental clinic at Naogaon district in Bangladesh with post insertion complains of denture induced mucosal ulcers. Data were collected in three months from 15th June 2025 till 14th September 2025.

Patients were attending dental clinic for denture insertion were selected. Patients with age ranged from 55 to 85 years were included in the study. All patients with dentures in both jaw that were inserted within past three month were selected. Dentures made up of poly-methyl methacrylate were included. Patients who had surgical interventions, resections of mandible/maxilla were excluded. All those with psychological or neurological problems were also excluded.

Ethical opinion was taken from the dental clinic or office. After taking informed consent to the patient, demographic data and history taking completed. Chief complain and intra-oral examination was done. Red mucosal ulcers and red areas located. Anatomical areas of higher traumatic injuries were noted in both jaws. Dentures were clinically checked for the causative factor for trauma due to dentures i.e., denture base irregularities, occlusal imperfections, over-extended dentures and were divided.

Data analysis:

Data was collected, tabulated and statistically analyzed by SPSS version 20. The age, gender, sites of ulcers, jaw type, denture induced problem and denture defects were indicated. Frequency and percentages were analyzed. Age and gender stratification with respect to oral ulcer sites was done. Chi square test was used to find out the association.

RESULTS

Out of total 200 patients 80(40%) were males and 120(60%) were females. Minimum age of the patients were 55 years and maximum age was 85 years. The mean age was 67.87±SD 6.875. Maximum ulcers were found in 65-74 years of age 98(49%) followed by 75-84 years 76(38%) and least were in 55 to 64 years old patients 30(15%). Association of age with development of ulcers was found significant; $p < 0.05$.

Most frequently observed denture problem was denture base roughness 98(49%) followed by over extended denture flanges 48(24%). Lack of denture relief was found in 28(14%) patients whereas 26(13%) had traumatic ulcers due to occlusal imperfection.

Table I: Frequently observed traumatic injury sites (n=200)

Ulcer sites	Frequency(n)	Percentage%
Labial or lingual frenum	24	12
Maxillary ridge	14	7
Maxillary sulcus	24	12
Maxillary frenum	6	3
Tuberosity	14	7
Mandibular ridge	52	26
Labial or buccal sulcus	36	18
Retromylohyoid area	30	15
Total	200	100

Ridge was frequently observed traumatic ulcers site in mandibular arch 52(26%) followed by reteromylohyoid area 30(15%). In maxillary arch frequent ulcers were found in maxillary sulci 24(12%) and tuberosity area 14(7%) (Table I).

Table II: Association of gender with site of traumatic ulcers (n=200).

Ulcer sites	Male	Female
Maxillary ridge	12(6)	22(11)
Maxillary sulcus	42(21)	12(6)
Maxillary frenum	2(1)	10(5)
Tuberosity	22(11)	16(8)
Mandibular ridge	22(11)	58(29)
Labial or buccal sulcus	16(8)	50(25)
Retromolar area	48(24)	20(10)
Labial or lingual frenum	36(18)	12(6)
Total	200(100)	200(100)

P-value 0.000

Significant association of gender with traumatic sites was seen P<0.05. In male maximum ulcer formation was found in reteromylohyoid area 48(24%) followed by maxillary sulcui 42(21%). In females commonly seen ulcer sites were mandibular ridge 58(29%) followed by mandibular labial sulcui 42(21%) (Table II).

Table III: Association of ulcers with arch type (n =200).

Ulcer sites`	Arch type	Arch type
	Mandibular arch (n)	**Maxillary arch (n)**
Maxillary ridge	0(0)	13
Maxillary sulcus	0(0)	29
Maxillary frenus	0(0)	7
Tuberosity	0(0)	15
Mandibular ridge	60	0
Labial or buccal sulcus	36	0
Retromylohyoid area	30	0
Labial or lingual frenum	10	0
Total	136 (68%)	64(32%)
	P value 0.00	**P value** 0.00

Association of traumatic ulcer development with respect to arch showed significant results P<0.05. Mandibular arch was frequently found to have traumatic ulcers 136(68%) as compared to maxilla 64(32%) (Table III).

DISCUSSION

The commonly occur traumatic injuries of denture in post insertion period. This is because of faulty fabrication. Biocompatible, inert and good-functioning complete denture provision is quite a challenge [12]. We know that below standard denture fabrication and its faulty defects are causes traumatic ulcer and as a result that a patient rejects using the prosthesis [13].

Their dominance was found over males i.e., 37.3% another study reported 56.4% male dominance over female 43.6% [14]. Likewise, more male to female ratio i.e., 1.6:4.0 was reported by another study i.e.; 72.5% males and 27.4% females with post-insertion complaints. Our study results are consistent with the results stated by another study reported 63% females and 37% males with traumatic ulcers [15, 16]. Female patient dominance could be explained by the fact female patients seek dental treatment more often than men [17]. The pain sensation is more to female than, male. So that in female notify more traumatic ulcers [12].

Laurina and Sobolleva stated that complaints of trauma under the dentures are generated whenever the denture fabrication i. The present study was aimed to evaluate the frequently involved sites of traumatic ulcers and find out their age and gender association [18]. In the present study majority of female patients 62.7% were reported with development of ulcers in post insertion period.

Maximum ulcer development under the dentures were seen in older age group i.e., 55-68 years of age, where 50% patients reported ulcer formation. Second highest group with ulcer development was oldest group with age ranged from 69-78 years i.e.; 39% whereas only 17% patients in 55-65 years age group developed ulcers. This difference of ulcer development within different age groups was found significant. Similar findings can be seen in the study of Ahmed and co-workers however the association with age was insignificant [16].

Similarly, other studies reported insignificant gender and age difference in their respective studies [15, 16]. Old age group reported more traumatic ulcers and the reason could be due to the fact that poor health of oral mucosal tissue, muscle weakness and reduced strength plus compromised systemic health all leads to poor denture tolerance, easy ulcer formations and thus more complaints [19, 20]. Many dentures related factors could

be responsible for trauma under the dentures [20]. Denture base roughness was found to be the most frequent cause of ulcers development. It accounts for 46.7% in denture related factors responsible for trauma. Over extended denture flanges were observed as the second most frequent finding responsible for ulcer development i.e., 22%. Lack of relief under the dentures was observed in 16% dentures, whereas occlusal imperfection accounts for 15.3%. These findings bear a striking similarity with already established studies [14, 17]. Similarly, Ettinger and Verma concluded the denture base irregularities to be the prime reason of denture retention failure [19, 21]. Occlusal errors about 3.6% were responsible for pain and discomfort in a study [14]. Jabeen and co-workers marked occlusal errors of a denture as a prime reason of pain [22].

Traumatic ulcers in edentulous patients comfort. Occlusion disturbs during denture processing as inherent polymerization shrinkage of acrylic disturbs the planned occlusal contacts [22].

The most commonly found trauma in our patients were maxillary and mandibular ridges i.e.; 26% followed by retro-mylohyoid area 15% in mandible. In maxilla sulci 12% and tuberosity area 7% were more developed ulcer in tissue surface of the dentures. Significant association between gender and trauma sites was well known. Male patients frequently developed ulcers in retro mylohyoid area 24%, where as in females 29% ulcers formed on mandibular ridges. Kiviovics in concordance with the results of the recent study stated that most injuries found in denture border areas i.e., 48.6% [14]. Few other associated studies stated the same results [4, 9]. We reported mandibular jaw to be the mainly traumatized arch 70.7% as compare to maxilla 29.3%. The significance association of arch type with ulcer formation was seen. The reason could be explained by the fact that mandibular arch has thin oral mucosal tissue and sharp bony surface formation casues in faulty adaptation of dentures. Slight overextension or occlusal prematurity can causes harmful for the oral mucosa [23, 24]. When denture fabrication or processing not up to mark then defects greatly results in discomfort and traumatic ulcer formation [24]. Dental practitioners should care on common and main arising complaints and notify the poor denture adaptation problem. Poorly adjusted prosthesis will effects on patients daily life, this may show the psychological, physical and functional wellbeing of an edentulous patient.

Limitations of the study:

This study was limited by its cross-sectional design, relatively small sample size, and clinic-based setting, which may restrict generalizability.

CONCLUSION

Mandibular arch is the commonest site for traumatic ulcer development. On the other hand maxillary area compared to less ulcer development and the commonest sites of the ridges and sulci. Old age and female predisposition have been seen in ulcer development.

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