

# Oral traumatic lesions – demographic and clinical characteristics

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## Abstract

This article describes a survey conducted among 56 patients with oral traumatic lesions (OTL) for the time period between January 2020 and June 2023. The survey includes patients with chronic illnesses who regularly take their medications, as well as clinically healthy people. The different features of each patient were reviewed and the characteristics of their lesions were analyzed – location, size, shape, surrounding tissues. The data was collected after a thorough clinical examination. The patients also filled a questionnaire regarding the type and characteristics of the lesions.

**Keywords:** oral mucosal lesion, traumatic ulcer, traumatic oral ulcer, iatrogenic injuries, chemical burns.

## Introduction

Trauma to the soft tissues in the oral cavity may occur from different factors: mechanical, thermal, chemical and electrical. The most common cause is mechanical injury from fractured teeth or roots, ill-fitting or improperly manufactured fixed or removable dentures and orthodontic appliances, or in some cases incidentally, for example biting oneself during eating, speaking or other activities. In view of this, most traumatic lesions are chronic in clinical course, but there are ones occurring from acute one-time trauma. Chemical injuries of the oral mucosa are common in the dental practice and are caused by local anesthetics, devitalizing agents, oral hygiene agents etc. Overall, oral traumatic lesions are slightly to moderately painful, cause discomfort and are a common reason to visit a specialist.

## Aim

To characterize the most common oral traumatic lesions and their demographic and clinical characteristics and their relationship with certain factors.

## Material And Methods

The current study includes 56 patients aged 12-83 years who visited the University Medico-Dental center and clinical student halls of the Faculty of Dental Medicine Varna for the period between January 2020 and June 2023. Among the examined patients there were ones with chronic illnesses who regularly take their medications, as well as clinically healthy people. The most common concomitant diseases the patients with OTL had were hypertension, type 1 and type 2 diabetes, patients undergone a heart attack or a stroke, patients with chronic pulmonary diseases or endocrine disorders. All patients who participated in the survey were informed that the data from their documentation could be used for scientific research and all of them have signed an informed consent document.

The oldest female patient in our study was 83 years old, while the oldest male was 82. The youngest patients from the male and female groups were 12 and 15 years old, respectively.

For the more thorough description of the examined lesions, the patients included in the study were divided in two groups – those who had lesions with a structural defect of the soft tissues, with or without a protrusion above the surrounding tissues and presence of a bottom. We named these lesions endophytic. The other large group of lesions were characterized by growing above the surrounding healthy tissue, either on a wide base or on a peduncle. We called such lesions exophytic (Fig.2).

### Inclusion criteria:

The research team defined the following criteria for inclusion in the study:

- All patients with existing traumatic lesions in the oral cavity, regardless of their age, who have sought help because of the lesions;
- Patients who have a history of a single or recurring injury to the oral tissues from mechanical, thermal, chemical or electric agents;
- Patients with lesions fitting the forementioned description that were discovered incidentally, during a regular check-up or on another occasion;
- Patients who signed an informed consent with which they willingly wish to participate in the current study.

### Exclusion criteria:

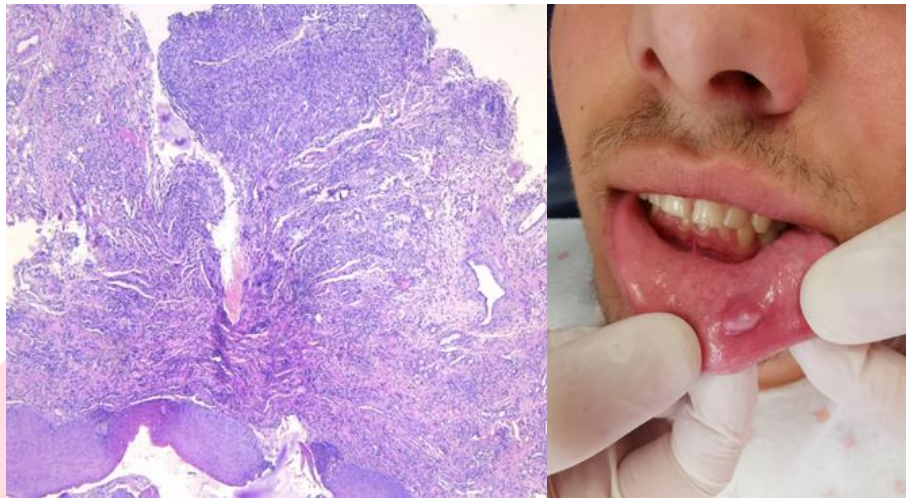
The research team defined the following criteria for exclusion of the study:

- Patients with existing lesions, for which a traumatic etiology was not discovered during the clinical examination;
- Patients without lesions in the oral cavity, established in the clinical examination;
- Patients who refused to participate in the study.

The patients participating in the study filled a questionnaire regarding the type and characteristics of their oral traumatic lesions. The questionnaire was filled after conducting a thorough clinical examination. The purpose of the survey was to gather information about the cause of the lesions, the presence of certain noxious habits and their possible relation to the traumatic lesions, the duration and characteristics of the pathology in each patient. The presence of removable dentures and removable or fixed orthodontic appliances was noted, as well as the presence of certain systemic diseases and conditions.

## Results

From the study conducted it becomes clear that the male to female ratio is in favor of women (n=32; 57.15%, compared to the men's n=24; 42.85%). It can be noticed that certain diseases are common mostly among female patients, for example the traumatic fibroma (Fig.1).



**Fig.1: Traumatic fibroma.**

The ratio between the two groups of lesions is as follows: exophytic lesions were 16 out of the examined 56 lesions or 28.5%. Endophytic lesions, in turn, were 40 in number or 71.5%. Therefore, the majority of traumatic lesions in the oral cavity clinically present as a structural defect of the soft tissues in the form of ulcerations.

From the endophytic lesions group most common were the decubital injuries from removable dentures and orthodontic appliances, followed by incidental biting of the soft tissues during eating, speaking etc. In the exophytic lesions group, 9 out of the 16 lesions were clinically and histologically characterized as traumatic fibromas, while the other lesions included retention cyst of the minor salivary glands (mucocele) and epulis. The development of a retention cyst of the minor salivary glands (mucocele) is common in patients who have the habit of biting and sucking their lips or is a result of an incidental trauma while speaking, eating or other activities leading to damage to the duct of a minor salivary gland.

Several authors divide oral traumatic lesions based on the type of traumatizing agent, classifying them as traumatic lesions, ones with a chemical or thermal genesis, as well as injuries caused by electric sources. The endophytic lesions group includes 40 patients and the ratios, based on the classification proposed above, is as follows: traumatic lesions – 36, chemical injuries – 4, patients with thermal and electric injuries were not registered. Among the most common causes for the occurrence of traumatic lesions are sharp edges of decayed or fractured teeth, crafting new removable dentures, as well as a result of incidental biting, including after applying local anesthesia for dental purposes. Chemical injuries can be described as damage to the oral mucosa from oral hygiene agents (rinsing with a high concentration mouthwash – 2 patients). We also observed 2 patients with iatrogenic injuries – one with damage to the lower lip during a teeth whitening procedure with a concentrated gel containing carbamide peroxide and the other - after treatment of a lower third molar with formocresol.

Among the examined patients there were clinically healthy ones, as well as those with chronic comorbidities. The most common systemic diseases were hypertension (n=34, 60.7 %); cerebrovascular disease (n= 14, 25 %), diabetes (n= 10, 17.8 %); endocrine disorders (n=9, 16.07%) as well as neurologic and neoplastic diseases (n=4, 7.14 %). Drug therapy influences the development and clinical course of oral traumatic lesions. The groups of medications that the examined patients take were antihypertensive therapy (n=33 or 58,92% of all patients); antiplatelet therapy (n=42, 75%), anticoagulants (n=10, 17.85%), corticosteroids (n=15, 26.78%) and two of the patients included in the study had taken bisphosphonates per os (3.57%).



**Fig.2: Exophytic lesion- traumatic granuloma located on the gingiva of the lower jaw.**



**Fig.3: Clinical case of morsicatio mucosae oris.**

As it was mentioned, adverse habits such as biting of the lips, cheeks, tongue or certain objects are a common cause for the development of oral traumatic lesions (Fig.3). The patients in the current study present the following characteristics regarding this parameter:

- 34 of all patients included in the study had the aforementioned habits or report of having had them in the past (60.71%);
- 13 of the examined patients report that they have or have had the habit of biting their lips (23.21%)
- 3 patients note that they bite their tongue or have done so in the past (5.35%)
- Biting of the cheeks has been reported in 7 of the examined patients (n= 7; 12.5%)
- 6 patients report that they have the habit of biting certain objects (n=6 ; 10.71%)
- 5 patients have stated that they simultaneously bite different oral tissues (8.92 %), the most common of which are lips and cheeks.

Another factor with regard to the development of OTL is the presence of fixed or removable dentures. In the current study 14 (25%) of the registered patients reported that they have removable and 9 (16.07%) have



fixed prostheses, both including orthodontic appliances. From the removable denture group 4 patients developed OTL after the production of new prostheses, with the lesions occurring 3-5 days after the production of the lesions.

The size of the lesions in both groups is between 4.5mm and 12.5mm, with the largest lesions located on the buccal mucosa, followed by those on the tongue and lips.

### Clinical characteristics of oral traumatic lesions

The most common characteristics describing oral traumatic lesions will be reviewed – shape, edges, protrusion above the surrounding tissues and presence of a bottom.

The shape of OTL is described in three variations – circular, oval and irregular. Among the examined lesions 27 (48.21%) have an irregular shape, followed by the ones with oval (n=15, 26.78%) and circular shape (n=14.25%).

The edges of the described lesions were divided in three categories – smooth, sharp and unclassified for any of the two parameters. 35 of the lesions had smooth edges (62.5%); 20 (35.71%) had sharp ones and one lesion has edges that fall in neither category (1.78%).

Regarding the protrusion criterion, 45 of the 56 examined lesions were raised, with the protrusion being erythematous, edematous or neither. Erythematous lesions were 42 or 75% of all examined lesions and 93.3% of all lesions raised above the surrounding tissues. Only 3 lesions were classified as edematous, which is 5.35 % of all examined lesions and 6.66% of all raised lesions.

Regarding the presence of a bottom of the lesion, the distribution is as follows: 39 out of the 56 lesions have a bottom that varied macroscopically – with granulations, with hemorrhages, crater-like or covered with a pseudomembrane. The most common is the crater-like bottom (n= 16, 28.57% of all lesions); bottom with hemorrhages (n=15, 26.78%), with a pseudomembrane – in 4 cases (7.14 %) and a granulated bottom (n=3, 5.35%).

### Discussion

From the obtained results it can be noticed that the majority of patients that suffer from OTL are female, which is in accordance with the findings of other authors (1). This could be due to the fact that females are more likely to seek help from a specialist than males. In addition, certain diseases such as the traumatic fibroma and fissural epulis are predominantly seen in females. Similar data has been shared by Mohammadi, Marzieh et al. in their 2017 study, which included 58 cases of epulis fissuratum (2). The traumatic fibroma is also more common in women, between the third and sixth decade of life. This is supported by the findings of Jiang et al. in their 2019 study (3).

In relation to the etiology of some exophytic traumatic lesions such as TUGSE (traumatic ulcerative granuloma with stromal eosinophilia),

Riga-Fede disease and traumatic granuloma, it has to be said that according to several authors trauma in these conditions is only a concomitant (aggravating) factor. El-Mofty et al. conclude that cell-mediated immune response plays a role in the pathogenesis of these conditions (4, 5). This explains why a history of trauma is reported in less than half of traumatic granuloma cases (6).

Regarding the patients with removable dentures, Jorgensen mentions an incidence of 5% of patients who developed traumatic ulcers caused by an imbalanced occlusion (7). Similar percentages have been noted by other authors (8), which ascertains that having removable acrylic dentures is an important factor, related to the development of traumatic lesions. Traumatic ulcers were established in 2-3% of institutionalized patients wearing dentures. In a randomized study of a population aged 65-74 years, traumatic ulcers were

observed in 5,5%. The direct cause of their occurrence was the overextension of the wings (flanks) of the denture or an imbalanced occlusion (9).

Another factor with relation to the development of traumatic lesions of the soft tissues in the oral cavity is a condition called morsicatio mucosae oris. It represents a chronic trauma of the oral mucosa as a result of the habit of biting and sucking the mucosa. Kang et al. report that this condition is seen more often in young females, during periods of emotional strain and stress (10). Usually diagnosing this condition is not an issue as it is based on a clinical examination and thorough anamnesis. It should be differentiated with lichen planus, leucoplakia, pemphigus and other dermatological diseases with oral manifestations (11,12).

Concomitant diseases and the drugs taken for their treatment are another factor related to the development of OTL. Martori et al., in a study from 2014 acknowledging systemic and local factors related to the development of oral lesions, conclude that old age and concomitant diseases are a factor with regard to the development of the forementioned lesions. In their study they also note the use of removable dentures and the period of their application for the development of OTL (13).

## Conclusion

Oral traumatic lesions are multifactorial in nature with great social relevance because of their high frequency and because of the long-term consequences which these lesions can lead. A chronic trauma, with its potential for malignization, is a factor associated with the development of neoplastic process. For this reason, early detection and treatment have high significance in the prophylaxis of carcinomas in the oral cavity.

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