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#### Olena Bulbuk

Dentistry PE department  
Ivano-Frankivsk National  
Medical University  
Ivano-Frankivsk, Ukraine

#### Mykola Rozhko

Dentistry PE department  
Ivano-Frankivsk National  
Medical University  
Ivano-Frankivsk, Ukraine

#### Oleksandr Bulbuk

Department of Prosthetic  
Dentistry, Ivano-Frankivsk  
National Medical University  
Ivano-Frankivsk, Ukraine

## Classification of defects hard tissue located in the gingival part of any tooth

Olena Bulbuk, Mykola Rozhko and Oleksandr Bulbuk

### Abstract

For problem solving of diagnosis and treatment of hard tissues flaws the significant role play the choice of tactics for dental treatment of hard tissue defects located in the gingival part of any tooth.

This work aims to study the problems of diagnosis and classification of defects hard tissue located in the gingival part of any tooth. That will contribute to the objectification of differentiated diagnostic and therapeutic approaches in the dental treatment of various clinical variants of this defect localization. The aim of the study - to develop the anatomical and functional classification for differentiated estimation of hard tissue damages located in the gingival part of any tooth, as the basis for the application of differential diagnostic and therapeutic approaches to the dental treatment of hard tissue defects disposed in the gingival part of any tooth. Materials and methods of investigation: has been conducted the examination of 48 patients with hard tissue defects located in the gingival part of any tooth. To assess the magnitude of gingival destruction were used the periodontal probe and X-ray examination.

The result of the conducted research is the classification of defects hard tissue located in the gingival part of any tooth using exponent power. The value of this indicator is equal to an integer number expressed in millimeters of distance from the epithelial attachment to the cavity's bottom of defect.

The proposed classification fills an obvious gap in academic representations about hard tissue defects located in the gingival part of any tooth. Also it offers the prospect of consensus on differentiated diagnostic and therapeutic approaches in different clinical variants of location. This classification builds methodological "bridge of continuity" between therapeutic and prosthetic dentistry in the field of treatment gingival defects of dental hard tissues.

**Keywords:** classification, hard tissue defects located in the gingival part, defects of dental hard tissue, diagnostics

### 1. Introduction

For the problem solving in diagnosis and treatment of hard tissues defects significant role plays the choice of tactics for dental treatment of hard tissue defects located in the gingival part of any tooth.

The reasons for the loss of gingival tissues could be carious processes, particularly at the contact surfaces, secondary caries, tooth depulcation, non-carious lesions of teeth, broken part or even all wall of tooth, poorly made orthopedic designs. <sup>[1]</sup>

In the treatment of hard tissue defects located in the gingival part of any tooth, appears the number of specific problems: the inability to isolate the working field by means of cofferdam or other means of isolation; exposure to blood, saliva, gingival fluid in the working area, which reduces the effectiveness of any bonding system; deterioration of fixing micro dentures. <sup>[2]</sup>

The method of treatment could be change depending on the size and location of the defect crown. For the adoption of tactical decisions and compiling proper treatment plan of the patient first of all must be established a detailed diagnosis. There are various classifications of coronal tooth lesions, based on various criteria. Convenient enough and widely used topographic classification cavities in teeth crowns, is classification, which was offered by Black G.V. (1924) <sup>[3]</sup>. Despite the "age" and its shortcomings, this classification is used until today in the world of dentistry, and its constantly improving <sup>[4-6]</sup>.

But none of the improvements do not allow to estimate the state of destruction of dental hard tissues in the gum area. Veneziani M. (2010) <sup>[2]</sup> first has proposed a classification and algorithm to choice of treatment for patients with gingival tooth defects. But this approach focuses on the impossibility of imposing cofferdam during recovery gingival defects and are not highlights the features of orthopedic treatment.

M. Żarow, (2013) <sup>[7]</sup> based on two parameters - the position of the cavity relative to the edge of alveolar bone (ie biological width (Fig. 1) - normally 2 mm) and technical specifications that

#### Correspondence

#### Oleksandr Bulbuk

Department of Prosthetic  
Dentistry, Ivano-Frankivsk  
National Medical University  
Ivano-Frankivsk, Ukraine

enable the imposition cofferdam - has proposed to allocate 5 classes of destruction of hard tissue areas.

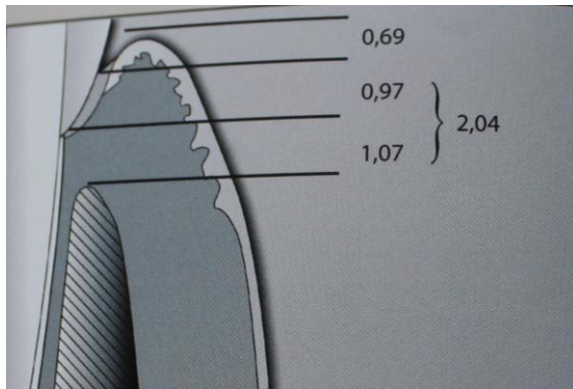


Fig 1: Biological width by Gargiulo

But this classification is also based on such parameters as possibility for cofferdam installation what doctors cannot always appreciate. Also in this prototype the author is dividing the defects depending only on his clinical vision of treatment for this disease.

Diagnosis, treatment and prevention of any clinical condition



Fig 2: The hard tissue defect located in the gingival part of tooth and measuring of its size.

To assess the magnitude of gingival destruction was used the periodontal probe (Fig. 2), if necessary was used X-ray examination.

### 3. Results and discussion

We relied on a famous prototype method of classification of defects hard tissue located in the gingival part by Žarow M., (2013) [7] based on two parameters - the position of the cavity relative to the edge of alveolar bone (ie biological width (Fig. 1) - normally 2 mm) and technical specifications that enable the imposition cofferdam. Žarow M. proposed to allocate 5 classes of destruction of hard tissue in gingival areas.

The basis of elaboration of classification we put own scientific hypothesis that all dimensions (in assessing Fig. 1) anatomical parameters can be compared to a integer number, that measured in mm (attached epithelium ~ 1 mm, attached connective tissue ~ 1 mm, biological width ~ 2 mm). To describe the depth location of the defect on cavity bottom in relation to the gingival level we use exponent which value is equal to the distance (integer number expressed in millimeters) of the level of epithelial attachment to the bottom of the cavity defect. Diagnosis is carried out by periodontal probe, if necessary, could be used modern methods of radiological examination. If the cavity's bottom is located over gum - we put the sign "+" before exponent power. If the cavity's bottom is under gum we put the sign "-". If the cavity's bottom is located at the level of epithelial attachment

are impossible without systematization. Therefore, we believe that there is an urgent need to review the classification of gingival defects teeth that would satisfy the views of scientists and clinicians in Ukraine. So improvement of diagnosis and classification of gingival defects of teeth is an urgent problem that needs a solution.

**The aim:** to develop the anatomical and functional classification for differentiated estimation of hard tissue defects located in the gingival part of any tooth, as the basis for the application of differential diagnostic and therapeutic approaches to the treatment of hard tissue defects located in the gingival part of any tooth.

### 2. Materials and methods

It was conducted the examination of 48 patients with hard tissue defects located in the gingival part of any tooth that are in 2014-2016 were treated at the center of IFNMU dentistry.

The criterion for inclusion of patients into the study was the presence of hard tissue defects located in the gingival part of any tooth on one or several teeth with various etiologies of appearance, except wedge-shaped defects.

we inscribe exponent power "0". The defect of hard tissue denoted "C". Thus, we propose the following classification:

C<sup>+3</sup> cavity's bottom is 3 mm or more above the epithelial attachment;

C<sup>+2</sup> cavity's bottom is 2 mm above the epithelial attachment;

C<sup>+1</sup> cavity's bottom is 1 mm above the epithelial attachment;

C<sup>0</sup> cavity's bottom is on the level of the epithelial attachment;

C<sup>-1</sup> cavity's bottom is 1 mm below the level of the epithelial attachment;

C<sup>-2</sup> cavity's bottom is 2 mm below the level of the epithelial attachment;

C<sup>-3</sup> cavity's bottom is 3 mm or more below the level of the epithelial attachment.

In order not heap up the diagnostic process with several classifications, into any of the classifications can be inserted the exponent power that would indicate the depth of destruction in the gingival part. It is best to combine classification proposed by us with classification elaborated by Black. For example: 2-1 class by Black - cavity's bottom is 1 mm below the level of the epithelial attachment, although it can be used with the other, such as: M-1OD+1 and others.

In the available medical literature we have not found works, devoted to the issues of clear classification hard tissue defects located in the gingival part of any tooth. It is clear that these defects can be divided into defects over gingival, defects on the level of the epithelial attachment and under gingival defects. The treatises by Žarow M. and M. Veneziani are

devoted to diagnosis and treatment under gingival defects [2, 7]. Schmidsered J. (2000), [8] has identified the five types of defects class by Black and proposed tactics of their treatment, they are more are related to defects over gingival. At the present stage of dentistry dynamic occurs growth of new knowledge, technologies and materials that significantly changed the methods of treatment of hard tissues defects. [9] Therefore, lack of classification of defects hard tissues dentition forms a methodological gap in modern chain of treatment such hard tissue defects.

#### 4. Conclusion

In general, we believe that the proposed classification fills an obvious gap in academic representations about hard tissue defects located in the gingival part of any tooth, offers the prospect of consensus on differentiated diagnostic and therapeutic approaches in different clinical variants of location and builds methodological "bridge of continuity" between therapeutic and prosthetic dentistry in the field of treatment gingival defects of dental hard tissues in gingival areas. Equally important is the suitability of this classification for objectification and unbiased comparison of published results of treatment of hard tissue defects located in the gingival part of any tooth.

#### Prospects for further research

In the future the proposed classification can serve as a basis for developing the algorithm selection method of restoring defects of dental hard tissues and for objective and unbiased comparison of published results of treatment of hard tissue defects located in the gingival part of any tooth.

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