

Morphological Features of Tissues of the Oral Cavity Organs in the Use of Non-Removable Orthopedic Structures

Kuzieva Madina Abdusalimovna

Department of Clinical Sciences, Asian International University, Bukhara, Uzbekistan

ABSTRACT

The article discusses the influence of non-removable orthopedic structures on the condition of oral tissues. The issues of modern methods of prosthetics based on implants are highlighted. The analysis of the most common errors and complications in prosthetics using fixed structures is carried out.

KEYWORDS: *cermet, non-removable prostheses, periodontal prosthetics, implants.*

The clinical medicine of the prosthesis changes the pattern of distribution of bending moments and, accordingly, VAT in the sections of the prosthesis, increasing by more than 10%. Small values of the structural rigidity criterion can cause significant stresses in the intermediate part of the prosthesis, supporting crowns and, as a result, fixation disorders at different heights of the supporting elements [2, 6, 17]. The use of non-removable bridge-shaped orthopedic structures is perceived positively by patients. Patients pay attention to an increase in the level of subjective comfort after the manufacture of non-removable prosthesis structures, speech and aesthetic adaptation is completed mainly in a short time. Patients adapt to the chewing function in a short time, the chewing load on the supporting teeth is distributed evenly, which avoids the formation of a conditioned reflex of the habitual side of chewing. Pain in the periodontal area of the supporting teeth after prosthetics is not pronounced, due to the presence of physiological load transfer during function [6, 27, 30, 31, 32, 39]. Analyzing the design features of prostheses with a low clinical crown of the tooth, including in young people, the authors indicate a preference for solid crowns, which will make the preparation more gentle [6, 13, 33, 34, 36, 40, 41]. Errors of the dental technician are observed when modeling teeth for crowns. The most common mistake is modeling high bumps on the chewing surface of premolars and molars [37]. If there is insufficient grinding of hard tissues from the occlusal surface of the tooth, the artificial crown will overestimate the bite and cause periodontal overload, which leads to traumatic periodontitis. When comparing the two technologies for manufacturing non-removable prostheses, it was determined that structures made using traditional methods have significantly more complications in contrast to modern solid-cast and metal-ceramic structures. Currently, because of the higher availability, stamped-soldered structures are widely used in dental practice. Often stamped-soldered prostheses lead to negative consequences for the patient, manifested in the form of caries and its complications and diseases of the marginal periodontal. Also, with the help of stamped crowns, it is impossible to restore occlusion and recreate aesthetic parameters such as the color and shape of natural teeth. All these data point to the obvious advantages of metal-ceramic and solid-cast structures. The above-mentioned

complications in patients with non-removable prosthetics are a good reason to monitor them at least once a year. An analysis of the long-term results of prosthetics shows that a violation of the fixation of fixed structures is observed in 38% of cases [22]. The analysis of errors and complications in prosthetics using fixed structures has been carried out. Based on the clinical study, the results of X-ray and laboratory diagnostics and according to the quality control data of the treatment stages, errors and complications were identified, most often encountered in prosthetics with fixed structures.

Errors at the stage of preparation for prosthetics:

- violation of the principles and quality of endodontic treatment of supporting teeth;
- inconsistency of the chosen treatment method with the established diagnosis;
- injury of the neurovascular bundle during mechanical processing of the supporting tooth (overheating of the tooth, preparation without water cooling);
- depulping of the supporting tooth without indications;
- perforation of the root canal when preparing the root canal for the tab;
- damage to the marginal gum;
- preparation of a tooth without a ledge;
- excessive taper of the supporting tooth;
- lack of temporary structures;
- errors in bite registration.

Errors at the stage of taking casts:

- use of alginate impression mass for the main impression;
- inaccuracy of the casts;
- the gap between the basic and corrective layers;
- the shift of the impression at the time of application;
- taking a cast without first using a retraction thread;
- detaching the impression from the spoon.

Errors at the stage of checking the prosthesis in the oral cavity:

- excessive processing of the frame during inspection;
- processing of cermets at high speeds;
- violation of the shape, color, and size of the crown.

Errors in fixing the prosthesis:

- incorrect choice of fixing material;
- violation of the instructions when working with fixing materials;
- uneven compression of the prosthesis during fixation.

Errors identified at the stages of prosthetics, which led to a number of complications:

- cementation of prostheses;
- ceramic chips;
- gingivitis in the area of the supporting teeth;
- traumatic periodontitis;
- traumatic pulpitis/periodontitis;

- gum recession;
- changing the color of the gums around the crown;
- secondary caries;
- destruction of the stump of the supporting tooth under the crown;
- dysfunction of the temporomandibular joint;
- pain in the area of the intermediate part of the prosthesis;
- allergic stomatitis;
- galvanism.

Thus, the authors studied the direct relationship between the occurrence of various complications and violation of the clinical laboratory protocol for the manufacture of prostheses [7, 8, 12, 18, 21, 29, 35]. The issues of the functional state of the chewing muscles and individual factors of local immunity of the oral cavity when using non-removable prostheses have been deeply studied [15]. The strength parameters of temporary polymer prostheses based on dental implants have been studied [3]. To improve the quality of orthopedic treatment, they were offered computerized milling of prostheses. Due to computer milling, the wax modeling and casting stage is eliminated, which leads to an accurate edge fit of the crowns to the supporting teeth or abutments of the implants [4, 5, 9, 11, 14, 16, 19, 20, 23, 25, 37, 39]. The greatest development in dentistry has been CAD / SELF-manufacturing of frames made of ceramic materials for metal-free prostheses, which allowed them to expand their use in bridge-like prostheses in the lateral sections of the dentition. But there is a problem of the strength of metal-free bridges, as well as zirconium oxide abutments, if necessary, the use of implants as a support [5, 38]. It is necessary to take into account a number of provisions in order to exclude the negative phenomena of materials arising from imperfections of physical properties used in the practice of orthopedic dentistry. In most cases, the doctor is forced not to bring antagonizing ceramic-metal prostheses to close contact in order to exclude ceramic chips. In the future, this may cause deformation of the occlusal plane due to dentoalveolar elongation. This study is of particular relevance when restoring the integrity of the dentition with the help of implants, when there is no buffer cushioning ability due to the absence of periodontal tissues. Thus, the insufficient knowledge of the clinical and morphological features of the oral cavity tissues in metal-ceramic prostheses, their practical significance for orthopedic dentistry indicate the relevance of this problem and the need for further research in order to correct the protocol of orthopedic dental treatment based on implants.

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