

**MORPHOFUNCTIONAL STATE OF THE TISSUES OF THE ORAL CAVITY  
WHEN USING NON-REMOVABLE ORTHOPEDIC STRUCTURES**Gubaev Muxiddin Sarimsakovich  
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The article deals with the influence of fixed orthopedic structures on the state of oral tissues. The issues of modern methods of prosthetics based on implants are covered. An analysis was made of the most common errors and complications in prosthetics using fixed structures. The evaluation of the physical and technical properties of metal-ceramic structures remains poorly studied. To avoid chipping of ceramics, antagonistic prostheses are not brought to contact, which can lead to deformation. Thus, the question of the influence of fixed dentures on the clinical and morphological state in the absence of periodontal tissues remains unexplored.

**Keywords:** ceramic-metal, fixed dentures, periodontium, prosthetics, implants.

**Introduction**

The issues of the morphofunctional state of the oral cavity organs in the application of fixed orthopedic structures and their effect on the tissues of the oral cavity remain poorly understood and are an urgent problem in orthopedic dentistry. As you know, partial loss of teeth is one of the most common forms of defects in the dentition, and therefore the restoration of the integrity of the dentition is carried out using various designs. For prosthetics, patients are increasingly choosing ceramic-metal prostheses, which have a number of advantages over other known types of dental prostheses. The positive properties of ceramic-metal prostheses are strength, durability, aesthetics, accessibility for the patient, hygiene, no plaque is formed on the ceramic surface. K. Yu. Obidny and O. A. Korshunova [26] considered the influence of the material of the orthopedic structure on the biological state of the oral cavity. The researchers found that, in comparison with other types of dentures, ceramic-metal structures do not violate the biological state of the oral cavity and do not contribute to the appearance of inflammatory complications caused by an abundance of pathogenic microflora. However, along with the advantages, there are also disadvantages of metal-ceramic structures. Thus, the metal can cause an allergic reaction in the organs of the oral cavity in patients, which requires the correction and prevention of such conditions. V. V. Namkhanov and BZh. A. Budaev [24] investigated this issue in his work "Features of the influence of denture materials on the organs of the oral cavity" and proposed a method for correcting and preventing such conditions. Metabolic and structural disorders lead to a deficiency of glutathione in the patient's body, which dictates the need for the introduction of drugs that stimulate the biosynthesis of this tripeptide. Appointment of acetylcysteine (600 mg 1 time per day for 3 weeks) to the patient contributes not only to the disappearance of symptoms of intolerance to metal fixed soldered bridges, but also to the restoration of the effectiveness of the antioxidant system: normalization of the content of



glutathione, diene conjugates, activity of glutathione reductase and glucose-6-phosphate dehydrogenase in erythrocytes, lactic and uric acids in blood plasma. High efficiency, low side effect, ease of use and availability of acetylcysteine allow us to recommend it not only for the correction of an already developed pathology, but also for its prevention. According to the literature, the processes that occur when the edge of artificial crowns is excessively immersed in the gingival sulcus are widely studied [10]. Clinical and histological studies conducted by A. B. Serov after prosthetics showed that inflammation of the gingival margin occurs where the subgingival location of the restoration margin is determined, regardless of the design and dental material used [26, 27, 28]. T. S. Alybekov paid great attention to the condition of the marginal periodontium during prosthetics with non-removable structures [1]. Low supporting crown of the bridge-like

### Materials and Methods

Clinical medicine of the prosthesis changes the distribution of bending moments and, accordingly, the SSS 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, abutment crowns and, as a result, violations of fixation at different heights of the supporting elements [2, 6, 17]. The use of fixed bridge-like orthopedic structures is perceived positively by patients. Patients pay attention to an increase in the level of subjective comfort after the manufacture of fixed prostheses, 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 abutment 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 abutment teeth after prosthetics is not expressed, which is due to the presence of physiological transfer of loads during function [6, 27, 30, 31, 32, 39]. Analyzing the design features of prostheses with a low clinical tooth crown, including in young people, the authors point out the preference for cast 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 cusps on the masticatory surface of premolars and molars [37]. With insufficient grinding of hard tissues from the occlusal surface of the tooth, the artificial crown will overestimate the bite and cause overload of the periodontium, which leads to traumatic periodontitis. When comparing two technologies for the manufacture of fixed prostheses, it was determined that structures made according to traditional methods have significantly more complications, in contrast to modern solid-cast and metal-ceramic structures. Currently, due to higher availability in dental practice, stamped-brazed designs are widely used. 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 periodontium. Also, using stamped crowns, it is impossible to restore occlusion and recreate such aesthetic parameters as the color and shape of natural teeth. All these data point to the clear advantages of ceramic-metal and solid-cast constructions. The above complications in fixed prosthetic patients 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 during prosthetics with the use of non-removable structures was carried out. Based on the clinical study, the results of X-ray and laboratory diagnostics, and according to the quality control of the stages of treatment, errors and complications were identified, which are most often encountered in prosthetics with non-removable structures. Mistakes at the stage of preparation for prosthetics:

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

Errors at the stage of taking impressions:

- use of alginate impression mass for the main impression;
- inaccuracy of impressions;
  - gap between the base and corrective layers;
- impression shift at the moment of imposition;
- taking an impression without first using a retraction thread;
- separation of the cast from the spoon.

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

- excessive processing of the framework during the check;
- processing of cermets at high speeds;
- violation of the shape, color, size of the crown.

Clinical medicine Errors in fixing the prosthesis:

- wrong choice of fixing material;
- violation of 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:

- de-cementing of prostheses;
- chipped ceramics;
- gingivitis in the area of abutment teeth;
- traumatic periodontitis;
- traumatic pulpitis/periodontitis;
- gum recession;
- discoloration of the gums around the crown;
- secondary caries;
- destruction of the abutment tooth stump 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 the violation of the clinical and laboratory protocol for the manufacture of prostheses [7, 8, 12, 18, 21, 29, 35]. The issues of the functional state of masticatory muscles and individual factors of local immunity of the oral cavity when using fixed prostheses have been deeply studied [15]. The strength parameters of temporary polymer prostheses based on dental implants have been studied [3]. The advantages and disadvantages of metal-ceramic structures of dentures during fixation on intraosseous implants were considered by S. N. Bely. To improve the quality of orthopedic treatment, he proposed computerized prosthesis milling. Due to computer milling, the stage of wax modeling and casting is eliminated, which leads to an accurate marginal fit of crowns to abutment teeth or implant abutments [4, 5, 9, 11, ]. The greatest development in dentistry has been CAD / CAM manufacturing of frameworks from ceramic materials for metal-free prostheses, which has made it possible to expand their use in bridges in the posterior sections of the dentition. But there is a problem with the strength of metal-free bridges, as well as abutments made of zirconium oxide, if it is necessary to use implants as a support [5, 38]. When analyzing the available literature, it was revealed that the main attention of researchers is occupied by problems identified at the stages of prosthetics, such as mechanical damage to the periodontal tissues, violation of the manufacturing protocol and the imposition of a prosthesis, and the toxic properties of the materials used. It should be noted that the assessment of the physical and technical properties of metal-ceramic structures, such as the effect of the hardness of the prosthesis material on periodontal tissues and on the



surrounding tissues of the oral cavity organs, remains poorly understood. In this case, it is necessary to take into account a number of provisions in order to exclude the negative phenomena of materials arising from the imperfection of the physical properties used in the practice of orthopedic dentistry. In most cases, the doctor is forced not to bring the opposing metal-ceramic prostheses to close contact in order to exclude ceramic chipping. In the future, this may cause deformation of the occlusal plane due to dentoalveolar elongation. In the available literature, there are no materials devoted to the study of the influence of physical factors of metal-ceramic structures on the organs of the oral cavity and its morphological changes.

### Conclusion

Thus, the lack of knowledge of the clinical and morphological features of oral tissues with 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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