

## **SELECTION CRITERIA FIXING MATERIALS FOR FIXED PROSTHESIS.**

**Matveev S.V., Sirak S.V., Mihalchenko D.V., Zhidovinov A.V.**

GBOU VPO "Volgograd State Medical University", Volgograd, Russia (400001, Volgograd Sq. Fallen Fighters).

---

Literature review is devoted to the issues of physical and chemical factors affecting the fixation of orthopedic structures, with the aim of improving the quality of orthopedic treatment, in particular, we examined the combined method of preparation of fixed prosthetic designs for permanent fixation. Overview is a basic information about research and development in this area. In a review article we detail some physical and mechanical properties and physico-chemical, to be met by the materials used for fixing, as well as methods of treatment designs directly before fixing. Also, the basic requirements that improve the quality of fit prosthetic and improve the quality of treatment in prosthetic dentistry and increase the service life of fixed prosthesis.

**Keywords:** stomatolgiya, fixation orthopedic structures, selection of materials for

---

introduction

Today in prosthetic dentistry is actively improved treatments using non-removable prosthetic. However, statistics show that the percentage of premature fixation disturbances range from 2% to 50%, and the development of caries in abutment teeth is from 23% to 50% of the total number of complications [1,2,3,4,5, 8,9]. From contemporary sources it is known that this contributes to a large number of factors such as the characteristics of the prepared tooth surfaces, the method of preparation of designs for fixation, as well as the choice of materials for fixing affecting the quality of fit. [4,6,7,10]

Research by several authors suggest that the adhesion of dental materials to dentin is difficult due to its heterogeneity. In order to improve adhesion of the material to the tooth structure in recent years, particular attention is paid to the factors affecting the fixation, namely adhesive systems, methods of surface preparation of the tooth stump, physical-mechanical treatment of orthopedic structures, which ultimately improves the fixation of prostheses not only enameled but dentin. [8,9,10]

When choosing the material for fixing the practitioner must be fully assured, not only in its physical and mechanical and strength, but also the biological characteristics, reflecting the impact on pulp, dental hard tissue and periodontal tissue [1,5,6].

However, despite the variety of materials for fixation of fixed structures no universal cement, which could be recommended for use in all clinical situations. Also important aspect is the question of choosing a method of processing non-removable prosthetic before permanent fixation in the oral cavity. In view of this raises the question of fixing the optimization techniques to improve the quality of orthopedic treatment [6,10]

The purpose of the review was to study the criteria for selection of the fixing material for fixed prosthetic designs.

## Materials and methods

For more in-depth and detailed vision of the problem we have carried out a comprehensive analysis of factors directly related to the fixation of structures, but focus our attention on the physical-chemical method of preparation of fixed prosthetic designs to the permanent fixation is one of the most pressing.

The most important characteristics for fixing materials are compressive strength, tensile, bending, allowing withstand the chewing pressure; solubility, which determines the ability of a material to resist the effects of oral liquid; adhesion to hard tissues of the tooth, affecting the long-term functioning of the restoration; density of the material; tensile, compression, bending; Materials tensile modulus and flexural; toughness; relative extension; time and thermal conductivity. [7,8,9].

Many scientists who study the causes of unsuccessful outcomes of treatment non-removable prosthetic designs have come to the conclusion that this contributes to a large number of factors, one of which is the selection and use of materials for fixing, as well as the choice of the method of preparation of fixed prosthetic designs before permanent fixation [4,5 7.9].

We have found that the hybrid composite cements physical properties and wear resistance superior to other materials, and are the drugs of choice for the adhesive fixation techniques. From 8 to 21 microns - the thickness of the cement, which achieves the highest adhesion strength [2.5]. For successful treatment requires monitoring of fit in the process of cementing and X-ray examination after the completion of fixing.

It should be noted that the ceramic structures etching using hydrofluoric acid or silane treatment leading to greater efficiency in the system connection tooth-crown-cement. Alcohol and ether is not used for processing, as they are capable of forming a film on the surface of the tooth hindering compound JRC fixing material and especially the polymer-based cement.

## Results and discussion

Based on the data, which were obtained during the review, we can make recommendations on the choice of material for fixing, as well as the method of preparation of surfaces before fixation prosthesis in the mouth.

To improve the quality of treatment in prosthodontics in preparation for fixation to avoid the use of alcohol, ether and 3% hydrogen peroxide for treatment and drying of the abutment teeth as this results in rapid cooling of the tooth and further increases the flow of dentinal fluid channels. Dry the stump of the tooth to be by using a special liquid, which is used for drying the channels.

## Bibliography:

1. Danilina TF, Naumova VN, Zhidovinov AV, Poroshin AV, Khvostov SN The quality of life of patients with oral galvanosis/ Bulletin: Health & Education millennium. - 2012. - T.14. - № 2. -P. 134.

2. Danilina TF, Safronov VE, Zhidovinov AV, Gumilevsky B.Yu. Cliniko-laboratory estimation of efficiency of complex treatment of patients with defects of dentition/Bulletin of Peoples' Friendship University of Russia. Series: Medicine. - 2008. - № 8. - P. 351-355.
3. Firsova I.V., Makedonova Iu.A., Mikhailchenko D.V., Poroiskii S.V., Sirak S.V. Clinical and experimental study of the regenerative features of oral mucosa under autohemotherapy//Research Journal of Pharmaceutical, Biological and Chemical Sciences. 2015. T. 6. № 6. P. 1711-1716.
4. Mihalchenko DV, Danilina TF, Verstakov DV Denture teeth with low crowns fixed bridge/ Fundamental research. - 2013. - № 9-6. – P.1066-1069.
5. Mihalchenko DV, Mihalchenko VF, Manuylova EV, Zhidovinov AV, Filyuk EA The rationale for the use of calcium-containing preparations in the treatment of chronic apical periodontitis according to the results of immunological studies/Modern problems of science and education. - 2014. - № 6. - P. 1019.
6. Mihalchenko DV, Zhidovinov AV, Arutyunov GR, Efremyan GM, Golovchenko SG Comparative evaluation retraction gels in prosthesis fixed prosthetic constructions/Modern problems of science and education. - 2015. - № 3. - P. 229.
7. Mihalchenko VF, Zhidovinov AV, Denisenko LN, Golovchenko SG, Matveev SV Local immunity parameters galvanosis in oral/ Fundamental Research . - 2015. - № 1-2. - P. 303-306.
8. Mikhailchenko D.V., Zhidovinov A.V., Mikhailchenko A.V., Danilina T.F. The local immunity of dental patients with oral galvanosis//Research Journal of Pharmaceutical, Biological and Chemical Sciences. -2014. -Vol. 5. -No. 5. -p. 712-717.
9. Milikevich VY, Klauchek SV, Mihalchenko DV Psychophysiological aspects of human adaptation to the prediction of orthopedic dental treatment/Dentistry. - 1998. - V. 77. - № 6. - P. 61-62.
10. Zhidovinov AV, Mihalchenko DV, Sletov AA, Loktionova MV Treatment and rehabilitation of patients with surround defects mandible/Clinical Dentistry. - 2016. - № 2. - P. 63 - 66.