

COMPARATIVE ESTIMATES OF THE MORPHOLOGICAL STRUCTURE OF THE SURFACE OF REMOVABLE DENTURES MADE OF DIFFERENT MATERIALS FOR THE REPLACEMENT OF DENTITION DEFECTS

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Abstract. *The study concluded that during 2020-2023, 47 people with acquired immune deficiency syndrome (AIDS) – the main group (M/G) and 20 healthy people - were prescribed treatment between the ages of 18 and 44. 23 of the M/G patients, of which 11 patients (M/G-1) are partially removable prosthesis from the drug "Ftorax" to be used (PRP), 12 vaccines from the drug " Ethacryl " for PRP and one vaccine for a complete removable prosthesis (CRP), as well as 5 vaccines from the control groups (C/G), 24 vaccines against a/g as an experimental group (E/G), and 10 C/G of thermoplastics were isolated from raw materials for PRP and CRP to groups of enthusiasts. Age groups: 18-25 - 34,7%; 26-34 - 54,3%; 35-44 - 11,0%; She was divided into groups and by gender. The diagnosis of the study participants with AIDS, the state of MMOC, the level of periodontal disease and the state of pressure tolerance, the morpho functional state of the general public, as well as the morphological state of the surface of manufactured dentures. With an integrated treatment approach, the advantage of a thermoplastic material was noted in local treatment.*

Keywords: *dentistry, acquired immunodeficiency syndrome (AIDS), HIV infection, periodontal disease, gnathodynamometry, oral fluid, oral microflora, partially and completely removable dentures, valplast, vertex Thermo Sense.*

Relevance. To optimize the work of a dentist and the effective organization of therapeutic and preventive outpatient care for patients, the quality of dental materials used plays a very important role, including for replacing defects in dentition with removable and non-removable denture structure (RD and NRD) depends on the correct preparation of an orthopedic treatment plan, on the choice of an adequate denture (D) structure and materials, depending on their hygienic condition [3, 16].

From year to year, there is an increase in the number of patients visiting the dentist for examination, rehabilitation, treatment of acute respiratory infections, and orthopedic care. In this regard, a dentist should know the clinical signs in the oral cavity (OC), which will allow him to correctly diagnose and provide adequate dental care, which will improve his quality of life [18]. In recent years, polymer materials have confidently entered the daily practice of orthopedic dentistry, and at a certain stage of its development have become the main, if not the only, type of materials used for the manufacture of many types of orthopedic products. polymethylmethacrylates turned out to be the most acceptable, and therefore popular, materials for dental prosthetics. They are successfully used in the practice of orthopedic dentistry as a

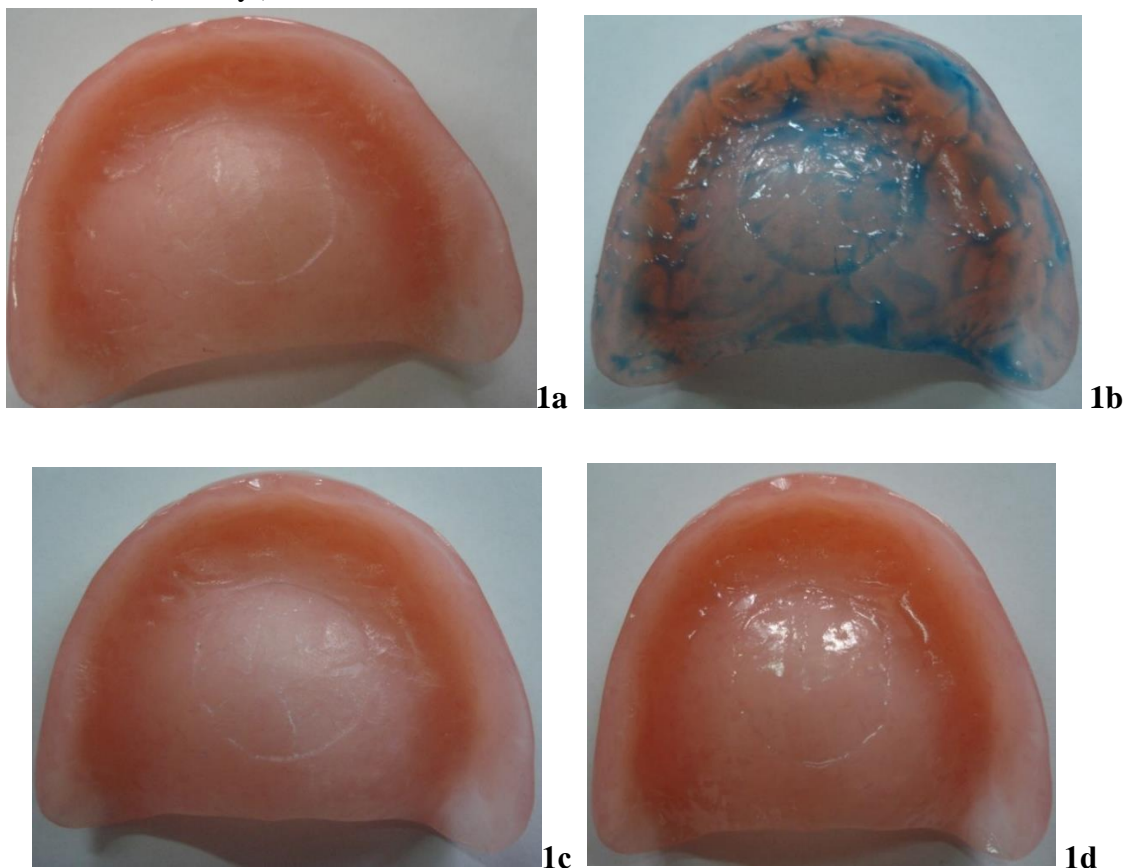
material for RD and NRD [5, 6, 7]. We can talk about the existence of a number of specific requirements for dental materials for this purpose. These include: - chemical inertia; - high strength, high shock resistance; - low density and high thermal conductivity; - sufficient hardness and low abrasion; - elasticity; - completeness and adequate polymerization time, minimizing the amount of residual monomer, or its complete absence; - low hydrophilicity, or complete hydrophobicity; - low abrasion and high wear resistance; - structural, chemical and physico-chemical stability; - low shrinkage, or its complete absence; - color fastness and resistance to solar radiation, air, and other environmental factors; - stability in a biological environment; - biomedical safety, including the absence of locally pathogenic effects (irritant, toxicity, allergenicity, etc.); - aesthetic adequacy (maximum approximation in appearance and color to the tissues of the oral cavity); - manufacturability (sufficient simplicity of performing the laboratory manufacturing phase); - the possibility of correction, remodeling and repair; - the ability to be sanded and polished; - constancy of shape and volume; - cost availability of products. [2, 8, 14, 17].

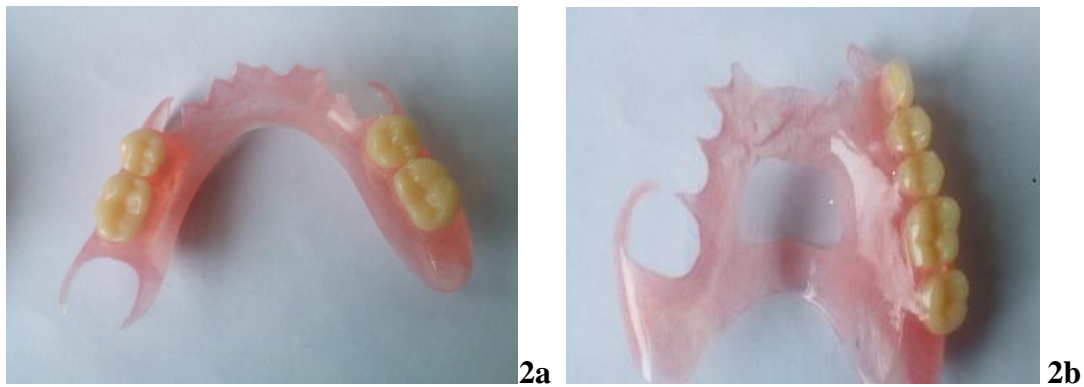
The materials of the acrylate group are distinguished by remarkable strength characteristics, in the process of manufacturing denture they allow to achieve high precession values, are available and convenient for work in dental laboratories. The speed and completeness of their polymerization can be easily regulated through the use of chemical catalysts or physical factors. In addition, they do not have pronounced toxic effects and in most patients do not cause clinically pronounced immunological and allergic reactions. In general, these materials seem to meet the above requirements [1, 3, 4, 9, 10]. However, as it turned out, prostheses with a polymethylmethacrylate base cause pathological changes in the tissues of the prosthetic bed. Acrylic prostheses are unstable to variable chewing (mechanical) loads. Fractures of the bases of prostheses on average account for 80% of the number of manufactured prostheses. [11, 12, 13]. All these reasons have led to the search for new technologies. Attempts to use pads made of elastic polymer materials under the base of polymethylmethacrylates have not completely solved this problem. In this regard, in the second half of the twentieth century, the direction of developing prosthetic materials from elastic thermoplastic polymer materials: propylene and nylon derivatives received active support. It should be emphasized that nylon materials are completely devoid of monomer impurities, have extremely high elasticity and strength, as well as excellent aesthetic characteristics - color and texture approaching those natural for MMOC. An important advantage of nylon materials in the manufacture of partial dentures is the possibility of their use without metal fixing devices. It turned out that hooks and clamps made of nylon with the highest strength are low-traumatic and highly aesthetic due to the fact that they are practically indistinguishable from the gum [12, 17]. However, laboratory and materials science studies have not been conducted in Uzbekistan to study the clinical efficacy and safety of nylon prostheses. In this regard, domestic clinicians have to judge the qualitative characteristics of these materials mainly from information from foreign sources, and, alarmingly, from the releases of manufacturing companies and suppliers, which, as is known, are far from objectivity. Taking into account the above, filling the information gap in relation to nylons, namely, the study of the clinical effectiveness of the use of dentures made of this material, at the present stage of development of domestic orthopedic dentistry should be recognized as relevant.

The purpose of the study. To determine the specific characteristics of acrylic and thermoplastic materials manufactured to replace defects in dentition using clinical and morphological methods.

Materials and methods. For the purpose of the study, 67 prostheses were made; of them, 23 prostheses are the main group (M/G), including 11 (M/G-1) - PRP made of "Ftorax"; 12 (M/G-2) PRP and PSP using "Ethacryl" and also, as an experimental group (OP/G) 20 is a prosthesis made on the basis of a high-tech non-dimensional thermoplastic material "Vertex thermos sense". In order to assess the surface of finished prostheses, it was studied using scanning electron microscopes (SEM); samples of prostheses; including acrylic plastics, after appropriate fixation, were dehydrated in alcohol-acetone, then dried by the critical point method in the NSR-2 apparatus and sprayed with gold in the IB-2 apparatus. They were examined in a Hitachi S 405A electron microscope. The photography was carried out using a microscope monitor screen using a Canon digital SLR camera. Micrographs and other obtained materials were processed using Microsoft Excel and Statistica-6 computer programs. The comparison of indicators between the groups was carried out using the Student's t-test. The differences between the groups were considered statistically significant at $p < 0.05$.

The results and their discussion. In order to compare the clinical and morphostructural state of the prostheses, we manufactured prostheses from the mass of "Ftorax", "Ethacryl" (Fig. No. 1 a, b, c, d) and thermoplastic materials "Valplast" from "Vertex thermo sense" (Fig. No. 2 a, b) to replace the defect of the dentition in patients, the surfaces made of prostheses from the mass of "Ftorax" and "Ethacryl" were treated, then etched, applied adhesion and polymerized and a) the surface of the prosthesis before etching (Ftorax); b) the surface of the prosthesis before etching (Ethacryl); c) etching with orthophosphoric acid (Ftorax); d) after applying the adhesive and polymerization (Ethacryl).





It is known that one of the important factors of the action of the prosthesis is its biological effect on the MMOC. Due to the fact that an isolated space is formed under the prosthesis, favorable for accelerated reproduction of a diverse, including virulent microflora, the possibility of penetration of microorganisms, their waste products and other protein substances deep into the underlying tissues also increases. Studies conducted with the help of SEM have shown that the contact surface of the prosthesis made of plastic plastic "Ftorax" "Ethacryl" is raised and the rhythmicity of the microrelief is traced. It looks more chaotic with the presence of sharp furrows and uneven depressions (Figs. 3a and 3b). When prosthetics of HIV-infected patients using the basic material "Ftorax" and "Ethacryl" to prevent microbial and fungal adhesion, as well as to prevent the state of intolerance to composite materials, we conducted a study on the technique of shielding the contact surface of dentures with the adhesive system "Gluma comford bond" light curing using the device "GC" gradia apparatus (Fig. No. 4a, 4b).

Fig. 3a. the surface of the prosthesis made of "Ftorax"; Fig. 3b made of "Ethacryl" material.

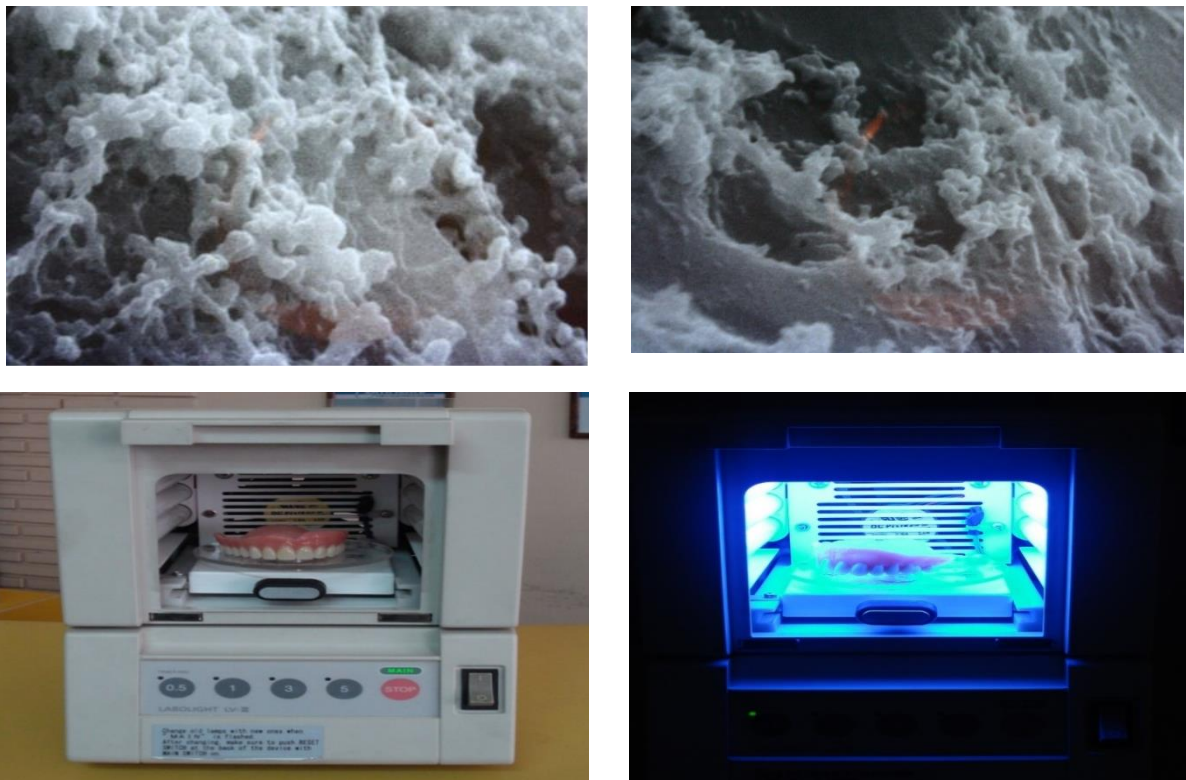


Fig.4a, 4b. Apparatus for shielding the contact surface of dentures with the adhesive system "Gluma comford bond" light curing using the device "GC" gradia apparatus.

However, coating the surface of the prosthesis made of plastic "Ftorax" with the adhesive system "Gluma comfort bond" leads to a more pronounced smoothness of them (Fig.4. a, b.), which prevents the penetration of microorganisms into the base of the prosthesis, as well as the release of plastic ingredients from inside the prosthesis into the joint. This circumstance has a beneficial effect on the MMOC of the prosthetic bed and helps to reduce possible complications from lamellar denture.

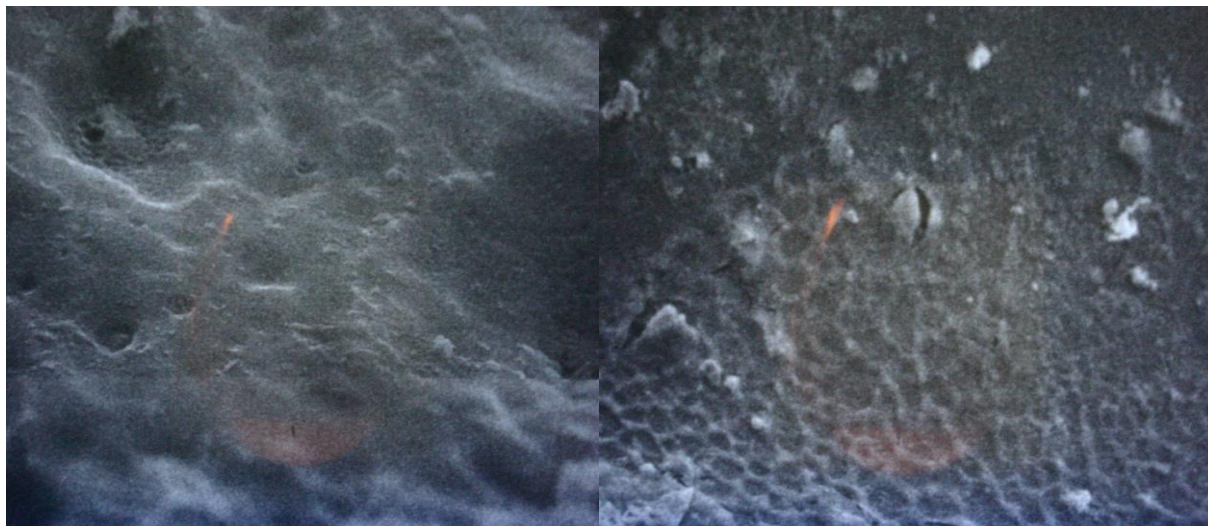
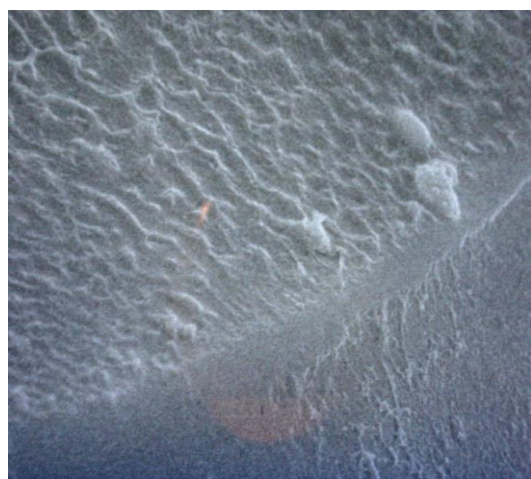
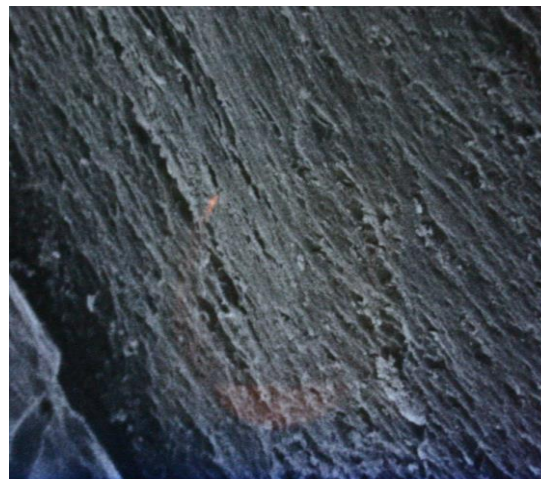


Fig. 5a After shielding the contact surface of the denture from "Ftorax" with the adhesive system "Gluma comfort bond" of light curing using the device "GC" gradia apparatus SEM x 400

Figure No. 5b. After shielding the contact surface of the denture from "Ethacryl" with the adhesive system "Gluma comfort bond" light curing using the device "GC" gradia apparatus SAM x 400



5a.



6b

Prosthetics "Valplast" from "Vertex thermo sense".SAM X 400

After prosthetics of patients in need of CRP and PRP, effective clinical and morphological signs were especially noted in OP/G prostheses from "Valplast" from "Vertex thermo sense" accompanied by normalization of the outer surface compared to acrylic plastics "Ftorax" and "Ethacryl" ranged from 37.7 to – 42%. According to a number of literature data, the average effectiveness of improving the clinical condition of PR in prosthetics using the material "Vertex

thermo sense" compared with orthopedic treatment performed with prostheses based on acrylic plastic "Ftorax" and "Ethacryl" is 30-40%.

Conclusions: According to the results of clinical, functional and laboratory studies, the high effectiveness of prosthetics using the basic material "Vertex thermo sense" for the treatment of secondary adentia in HIV-infected patients has been proven.

The obtained clinical and laboratory data on the histological condition of the surface of the prosthesis allow us to recommend dentures made of thermoplastic material "Vertex thermo sense" for the replacement of defects in dentition in individuals, as a method of choice, their use significantly increases the effectiveness of orthopedic measures.

When using acrylic plastic "Ftorax" as a base material, to prevent microbial and fungal adhesion, as well as to prevent the state of intolerance to composite materials in patients, we recommend shielding the contact surface of the prosthesis with an adhesive light curing system.

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