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The Optimal Type of Prosthesis Based on A Comparative Assessment of The Impact of Cermet and Zircon Prostheses

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Abstract:

In the modern world, the loss of one or more teeth as a result of dental diseases is one of the serious problems of the healthcare system, since it leads to a decrease in the quality of life of the patient, which leads to various diseases. According to an epidemiological study by the World Health Organization (WHO), partial or complete absence of teeth due to injuries, caries and periodontitis is observed in 75% of the population in different regions of the world." According to some authors, the proportion of complete occlusive defects increases with age. Often, in the absence of one or more teeth, treatment is carried out with conventional portable prostheses or bridge prostheses with a base in the formed teeth. The need for orthopedic treatment remains high: from 30.3% in the age group of 20-29 years to 68.1% in the age group of 50-59 years." In turn, the high frequency of patients with dentition defects requires the speedy solution of such social, physiological, aesthetic and psychological problems.

Keywords: Optimal Type Of Prosthesis, Zircon Prostheses.

Introduction:

A number of studies are being conducted around the world aimed at improving the effectiveness of various methods of prosthetics using a support-retaining device. In this regard, to improve methods for diagnosing the condition of oral tissues; development of new models of dentures; development of orthopedic prostheses for internal bone implants; to determine the shape of dentures, as well as their physico-chemical properties; detection of cancer development in the area of periimplantitis; development of prostheses of a special design with a different set of shapes and sizes that allow patients to operate in any clinical setting; The priority area of research remains the improvement of modern technologies in dentures. In addition, preventing possible complications by creating dentures, determining the state of microcirculation in the tissues around dentures, determining the level of pressure on the periodontal teeth after prosthetics with insoluble dental structures and adapting to the dentition to restore chewing function are the most pressing issues.

In our country, measures are being taken to improve the healthcare system, improve the treatment of dental defects through orthopedic treatment using high-tech dentistry, and improve the efficiency and quality of medical care provided to the population.Such tasks as increasing the efficiency, quality and popularity of medical care, as well as the formation of a system of medical standardization, the introduction of high-tech methods of diagnosis and treatment, the creation of effective models of patronage and dispensary, support of a healthy lifestyle and the function of preventive diseases are noted [15.17.19.21.23].

"One of the important tasks in this regard is to bring dentures in line with international standards and to develop highly effective modern methods of orthopedic treatment based on dentures among people of different age categories.

The purpose of the study. Choosing the optimal type of prosthesis based on a comparative assessment of the impact of cermet and zircon prostheses on the oral mucosa and immune factors protecting the oral cavity.

Research objectives. determination of types of structural materials in patients using fixed prostheses;determination of the condition of the marginal gum, pulp and periodontal tissues in the area of the prosthesis;structural and functional assessment of marginal gum tissue of supporting and retaining teeth, taking into account the design features of metal-ceramic prostheses;investigation of microcirculation in the area of supporting and retaining teeth in patients with fixed prostheses;determination of the level of galvanic currents in the oral cavity for various prostheses;investigation of the state of immune homeostasis of the oral mucosa in patients before and after prosthetics of various orthopedic structures;assessment of cytokine status in patients before and after orthopedic structures, as well as their role in predicting the process and results of prosthetics.The object of the study. 144 patients (76 women and 78 men) aged from 20 to 60 years and 30 healthy people of the Scientific and Practical Center of Dentistry of the Bukhara State Medical Institute were taken.Subject of research the influence of metal-ceramic and zirconium dentition on the immunological homeostasis of the oral mucosa was studied. Research methods. The study used general, dental, clinical and functional, laser Doppler fluometry, radiography, ultrasound densitometry, and electromyography, immunological, histological and statistical methods.In a separate part, definitions are given of the need to develop and implement new approaches to the etiology, pathogenesis, diagnosis and treatment to study the functionality of the dental periodontal complex, as well as the need for a deeper study of the factors that damage the peripheral periodontal supporting teeth in prosthetics. In addition, there are aspects of prevention, mitigation of this effect that need to be addressed rationally and are of crucial clinical importance for dentists. To fulfill the tasks set, we conducted a step-by-step examination of patients who needed dental prosthetics. Stage I: A retrospective analysis of outpatient dental records of patients was carried out on the basis of dental organizations (clinics) in 2015-2019. Using the retrospective analysis questionnaires developed by us (Appendix 1). According to gender characteristics, patients were divided into age groups: from 20 to 60 years and orthopedic diagnosis. At this stage, the distribution of patients was carried out according to the following types of orthopedic structures: non-removable metal prostheses, non-removable metal-ceramic prostheses, prosthetic structures.At the second stage of the study, in 2019-2021, comprehensive treatment of patients with dentition and defects of hard tissues of teeth and VZP (inflammatory periodontal disease) was carried out [2.4.6.8.10.12.14.16.18.20.21]. The main group of patients consisted of 244 people who underwent complex treatment (periodontal treatment and prosthetics mainly with fixed aesthetic orthopedic structures and combined prosthetics). The study group included 126 women aged 20-60 years and 118 men without concomitant severe visceral pathology.

The comparison group consisted of 30 patients with defects in the dentition and hard tissues of the teeth, as well as patients without inflammatory periodontal diseases who received traditional treatment.Immunological studies were conducted in the laboratory of Immunology of the Institute of Human Immunology and Genomics of the Academy of Sciences of the Republic of Uz bekistan. 210 people were examined: the main group consisted of 180 patients with defects of dentition and hard tissues of teeth. Immunological studies were carried out using enzyme immunoassay (ELISA) to determine the amount of IgG, IgM and sIgA class immunoglobulins, cytokines - IL - 4, IL - 6, TNF-α, IL-1β. oral fluid (RV).

The method of immune analysis used by us was carried out in two stages. To detect immunoglobulins of the sIgA, IgG, IgM classes in patients with inflammatory diseases of various orthopedic structures and periodontitis and in the control group, at the first stage, caliber samples with a known concentration of the corresponding immunoglobulin and analyzed samples with immobilized monoclonal antibodies to specific immunoglobulins were isolated. Immunoglobulin binds to monoclonal antibodies immobilized in the cell, then the tablet is washed with a vosher to separate it from the excess conjugate.At the second stage of detection, the sIdA bound in the

wells was detected by a conjugate of monoclonal antibodies to the a-chain of IdA with horseradish peroxidase. The excess conjugate in the mixer was also washed, and the resulting immune complexes "immobilized monoclonal antibodies–sIdA conjugate" were determined by the enzymatic reaction of peroxidase with hydrogen peroxide in the presence of chromogen (tetramethylbenzidine). The chromogen color intensity corresponded to the concentration of sIdA in the analyzed sample. At the second stage, a conjugate of monoclonal antibodies to the light (lambda and kappa) chains of human immunoglobulins with peroxidase was injected into the cells to detect immunoglobulin G. Thus, immune complexes "immobilized monoclonal antibody-IgG conjugate" were formed, followed by an enzymatic reaction with a chromogen (tetramethylbenzidine) using hydrogen peroxide and peroxidase, which were detected in this way. The chromogen staining intensity corresponded to the IgG concentration in the analyzed sample.At the second stage, a cell-compatible conjugate was introduced to detect M-immunoglobulin, washed in a mixer to separate the excess conjugate, and the resulting immune complexes "immobilized monoclonal antibody-IgM conjugate" were detected using a similar enzymatic reaction [1.3.5.7.9.11.13.15].

IgM concentrations were determined in the studied samples in terms of the intensity of staining.General characteristics of patients with various orthopedic structures, defects of dentition and hard tissues of teeth, as well as clinical characteristics of patients with inflammatory periodontal diseases, the degree of dependence of the main classes of immunoglobulins A, sA, G, M, E, the severity of inflammatory-dystrophic processes in periodontal tissues and are devoted to the statistical determination of immunoglobulins in patients of the comparison group.At the first stage, we conducted a retrospective analysis of outpatient medical records of 1984 patients aged 18 to 70 years who sought dental care in 2015-19. As a result of the analysis, we found that 1,154 (58.1%) patients needed orthopedic treatment, including 793 people who sought orthopedic help. Among those who applied for orthopedic care, 486 (61.3%) were women and 307 (38.7%) men.

As a result of our study, the majority of patients with orthopedic profile were patients with DZR1 -31%, followed by patients with DTTZ - 28%, patients with DZRSH - 18%, DRZ11 - 15% and DZR1U - 6%. The lowest proportion was in the category of patients without teeth - 2%. The prevalence of defects in dentition and hard tissues of teeth among patients seeking orthopedic care [20.21.22.23].

Conclusion.

1. The type of structural features (stamped-soldered structures, facing structures made of plastic, bulated crowns and bridges with titanium dioxide coating) have a negative impact on the marginal periodontal and oral mucosa, manifested by high values of electrochemical potentials (120-150 mV), unsatisfactory hygienic condition, a profound change in the dental periodontal complex.
2. Hemodynamic changes in marginal tissues negatively affected the defects of the dentition and their treatment with metal structures. Positive hemodynamic shifts were observed in prostheses made of cermet and zirconium oxide.
3. When assessing microcirculatory changes in marginal gum tissues in catarrhal tooth defects and their treatment with orthopedic dental structures, the relevance of the laser Doppler fluorometry method was confirmed.
4. Infiltration by lymphocytes, macrophages and leukocytes was observed in the marginal mucous membrane of the gum in patients using solid metal structures.
5. It is shown that the diagnosis and treatment of high levels of galvanic currents should include pathogenetic treatment of periodontal tissues before removal of various additional metal structures and repeated prosthetics.
6. It has been shown that prostheses with various metal additives in the oral cavity, i.e. titanium-coated braces, cast bridge-like structures, cause persistent inflammatory processes (periodontal abscesses, gingivitis, periodontitis) in the marginal periodontium.
7. During prosthetics of various orthopedic structures for conditionally healthy people, a statistically significant difference was revealed in the amount of IL-1b, IL-6, TNF-α and anti-inflammatory cytokines IL-10, which were studied when comparing the state of oral cytokines in patients.

8. In patients with metal-ceramic prostheses, local immune antigens (intolerance to metal alloys) increase the permeability of the oral mucosa as a result of the active reaction of the prosthetic bed to traumatic effects, which is expressed in high titers of immunoglobulins slgA, IgM, IgG and ts.
9. Positive dynamics was observed in the indicators of local immunity of oral fluid in patients with zirconium prostheses. The foci of inflammation resulting from the exposure of the prosthesis were not observed during the examination, and it was found that their satisfactory regeneration was formed due to the complete adaptation of the tissues of the prosthetic bed to the prosthesis.

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