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AN INTEGRATED APPROACH TO ORTHOPEDIC TREATMENT OF DENTITION DEFECTS IN PATIENTS WITH CHRONIC RECURRENT APHTHOUS STOMATITIS

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INTRODUCTION

Relevance of the study

Partial absence of teeth leads patients to an orthopedic dentistry clinic, but patients often suffer from chronic recurrent aphthous stomatitis (CRAS) in parallel**.**

Literary sources state the possibility and necessity of orthopedic treatment of patients with chronic recurrent aphthous stomatitis (Volkov E. A., Polovets M. L., 2015; C. C. Gomes, R. S. Gomez, 2016). Patients cannot receive orthopedic dental care for a long time due to the recurrent course of the disease.

Pharmacotherapy of chronic recurrent aphthous stomatitis in the prosthetic treatment of patients with partial absence of teeth is not always effective and may be associated with the specificity of dental care for this pathology (Uspenskaya O.A., 2015; Borisova E.G., 2019; M.C. Goiato, E. Freitas, D., 2017). Domestic researchers (Dubova, L.V., 2015; Shkhagapsoeva, K.A., 2017; Leshcheva E.A., 2018) suggest using prostheses with a two-layer basis to increase the effectiveness of orthopedic dental care for patients with CRAS, but these works do not fully consecrate the criteria and long-term results of the proposed techniques.

Recent studies show that in the development of chronic recurrent aphthous stomatitis, weakening of local immunity and violation of the protective properties of oral fluid are essential (I.M. Rabinovich, 2000; D.A.Fedorov, 2013; I.Y. Karpuk, 2017; N.A. Karpuk, 2018). Changes in the functioning of the immune system were also revealed when using various types of orthopedic dental structures (N.V. Chirkova et al., 2007; S.E. Zholudev et al., 2007; D.A.Fedorov, 2013; I.M. Bykov et al., 2014). In order to increase the effectiveness of treatment of chronic recurrent aphthous stomatitis, the use of immunomodulatory drugs, the development of various schemes for their inclusion in the scheme of complex therapy is relevant (Nikitenko V. V., 2017; Nikitina E.A., 2018). In the last decade, the domestic drug Azoximer bromide, capable of activating the local immunity of the oral cavity, has been widely used in medical practice. It not only effectively increases the ability of tissues to protect against infection, but also improves

regeneration (Mikhailova E.S., 2007; Moskovsky A.V., 2015; Karpuk, N.A.,2018;).

Thus, the problem of providing orthopedic dental care to patients with chronic recurrent aphthous stomatitis, which includes the rationality of choosing a design, reducing the time of adaptation to prostheses, and the use of complex drug therapy, requires further research.

The degree of elaboration of the research topic

An increase in the number of published works on the problem of treatment and prevention of chronic recurrent aphthous stomatitis confirms its relevance (Borisova E.G., 2019; Gazhva S.I. et al., 2015; Uspenskaya O.A., 2015, etc.). A comprehensive analysis of various pharmacological, physiotherapeutic agents was carried out (Q. Le, J. Cahill, A. Palmer-Le [et al.], 2015; Shevchenko, E.A., Reshetina M.V., 2016), however, the role of orthopedic treatment in the comprehensive rehabilitation of patients with this pathology has not been sufficiently studied (Kazarina L.N., 2017; Zholudev S.E., 2015, etc.). An important problem remains the prevention of recurrent CRAS after orthopedic treatment of patients (Abbasova D.B., 2018, Bagri A.V., 2018, Borisova E.G., 2019, Gromova S.N., 2018, Eshiev A.M., 2019). Therefore, the improvement of treatment, preventive measures to reduce the risks of complications and frequent relapses remain an urgent problem in relation to patients with CRAS in secondary adentia. As is known, psychoemotional factors play a certain role in the formation of motivation and compliance of the patient to orthopedic treatment (Gileva O.S., Kuklina E.A., 2017). For orthopedic dentists, this issue may also be of practical interest. Taking into account all of the above, the goals and main objectives of this dissertation research have been developed.

The purpose of the study

Based on the use of modern thermoplastic material, medical and physiotherapy, to improve the comprehensive orthopedic dental treatment of

patients with manifestations of chronic recurrent aphthous stomatitis with partial absence of teeth.

Research objectives

1. To assess the degree of motivation of patients suffering from chronic recurrent aphthous stomatitis for dental orthopedic treatment, and to determine the role of correction of patient compliance at the stage of dental rehabilitation.

2. To carry out a comprehensive assessment of the condition of the mucous membrane of the prosthetic bed of patients using partial removable dentures made of "Deflex" material in dynamics against the background of the use of complex medical and physiotherapeutic treatment, including the drug "Azoximer bromide".

3. To implement the developed methodology for providing comprehensive orthopedic care to patients with chronic recurrent aphthous stomatitis and evaluate its effectiveness by clinical, laboratory parameters and quality of life indicators.

4. To develop recommendations for optimizing comprehensive orthopedic dental treatment in case of partial absence of teeth in patients suffering from chronic recurrent aphthous stomatitis.

Scientific novelty of the study

- For the first time, the effect of the drug "Azoximer bromide" in chronic recurrent aphthous stomatitis on the period of adaptation to partial removable prostheses has been studied.
- For the first time, a decrease in the degree of clinical symptoms was revealed when using partial removable dentures in patients with chronic recurrent aphthous stomatitis with the combined use of the dental material "Deflex" and the drug "Azoximer bromide" and a comparative assessment of the results was carried out.
- Theoretically justified and practically confirmed is the need to include in the algorithm of therapeutic and preventive measures in the orthopedic treatment

of patients with chronic recurrent aphthous stomatitis the use of the basic material "Deflex", the complex use of medication and physiotherapy.

- New data has been obtained on the role of compliance correction at the stage of dental rehabilitation of patients with partial secondary adentia suffering from chronic recurrent aphthous stomatitis, which is initially associated with a low level of motivation for dental treatment.

Theoretical significance. An algorithm of interdisciplinary cooperation between orthopedic dentists and somatic dentists for the rehabilitation of patients with chronic recurrent aphthous stomatitis using partial removable prostheses is proposed.

The necessity of using the drug "Azoximer bromide" in orthopedic treatment using partial removable dentures in patients with chronic recurrent aphthous stomatitis and partial absence of teeth is substantiated

The proposed algorithm of comprehensive dental care for chronic recurrent aphthous stomatitis makes it possible to identify patients at risk for acrylic structures and recommend safe orthopedic treatment tactics to patients and doctors.

Practical significance. It is recommended that patients with chronic recurrent aphthous stomatitis with partial absence of teeth receive double-layer dentures made of dental material "Deflex".

Optimal for chronic recurrent aphthous stomatitis with a partial absence of teeth, it is the manufacture of structures made ofthermoplastic materials.

For therapeutic and prophylactic purposes, recommendations have been developed forcomplex drug and physiotherapy of patients usingremovable dentures against the background of chronic recurrentaphthous stomatitis

Methodology and methods of dissertation research

The methods of scientific cognition formed the basis of the methodology of this dissertation, which is carried out in the design of an open comparative non-randomized study, confirmed by clinical, laboratory and statistical methods.

We observed 127 patients with partial tooth loss who had a history and during orthopedic treatment of clinical signs of chronic recurrent aphthous stomatitis. The use of 191 scientific literary sourcesof domestic and foreign authors formed the theoretical basisof the dissertation.

The first control group (42 people) consisted of patients with chronic recurrent aphthous stomatitis, who, taking into account the condition of the oral mucosa, had partial removable orthopedic structures made of dental material "Deflex" (reg. ud. RZN 2014/2250).

The second group (45 people) included patients with a history of chronic recurrent aphthous stomatitis, who, after applying dentures made of dental material "Deflex" (reg.ud. RZN 2014/2250), used a method developed and patented by us for the treatment of CRAS, including medication (applications to the elements of the lesion of the oral mucosa "Diplen Denta LX" (reg.ud. no. FSR 2008/02392) 2 times a day for 7 days, Vinilin balm (reg.ud. LS-000216) 2 times a day for 15 minutes for 5 days and physiotherapy (device for local irradiation with unpolarized pulsed red light "Svetozar" (reg.no.RZN 2014/1398) for 1 minute for each element of mucosal lesion for 5 days.

The third group (40 people) consisted of patients who, in parallel, during the manufacture of partial removable dentures made of dental material "Deflex" (reg.ud. RZN 2014/2250), in addition to medication and physiotherapy, were prescribed the drug "Azoximer bromide" (reg.ud. R No. 002935/4) (Russia) sublingually 1 tablet twice aday (40 people).

Exclusion criteria for all groups: simultaneous participation of the patient in other similar studies, the use of other therapies, the presence of severe somatic pathology that can distort the results of the study.

Criteria for early termination of participation in the dissertation research: withdrawal of the patient's written informed consent to refuse to participate in the dissertation research, the decision of the research physician in the interests of the patient to terminate his participation in the study, identification of non-compliance with the inclusion/exclusion criteria during the dissertation work,

violation by the patient of the algorithms of the dissertation research or the regime of the medical institution.

Main scientific results

The results of the research and statistical processing of the materials made it possible to formulate and substantiate the provisions and conclusions of the dissertation work. The degree of reliability of the work is based on a sufficient number of patients (127 people) who took part in an in-depth clinical and laboratory study, the presence of comparison and control groups, relevant and appropriate clinical and laboratory research methods and mathematical processing of the results obtained in the work. The scientific novelty of the statements that are submitted for defense, as well as conclusions and practical recommendations follow from a comprehensive clinical and laboratory study, supported and executed in figures, diagrams, tables and confirmed by statistical data processing.

The main results of the study were reported and discussed at the All-Russian scientific and practical Conference "Topical issues of maxillofacial surgery and dentistry" (St. Petersburg, November 21-22, 2017), the International Scientific and Practical Conference "Dental Spring in Belgorod - 2022" (Belgorod 2022), the XXIX International Congress "Health and education in the XXI century", December 16-18, 2022, Moscow), the All-Russian scientific and practical conference "Theoretical and practical issues of clinical dentistry" (Moscow St. Petersburg, October 5-6, 2023), a joint meeting of the Departments of General Dentistry, Maxillofacial Surgery and Dentistry, Otorhinolaryngology, Ophthalmology, Balneology and Physiotherapy.

The obtained results are used in the medical and scientific-pedagogical work of the department and clinic of general dentistry of the Military Medical Academy n. a. S.M. Kirov, as well as in the medical work of the «Stellite» dental clinic in St. Petersburg.

The main results and provisions of the scientific work are presented:

1. Problems of providing orthopedic dental care to patients with chronic recurrent aphthous stomatitis / Borisova E.G., H.O. Yagmurov, A.F. Arrogant //Medical and pharmaceutical magazine “Pulse”. 2022. T. 24. No. 4. P. 75-79 (pp. 14-18) (5/3).

2. The influence of somatic status on the occurrence of chronic recurrent stomatitis / A.A. Komova, E.G. Borisova, V.A. Zheleznyak, G.B. Gorshunov, H.O. Yagmurov //Applied information aspects of medicine. 2023. T. 26. No. 2. pp. 84-91 (p. 27) (8/4).

3. Clinical methods of examining patients with chronic diseases of the oral mucosa during the provision of orthopedic treatment / E.G. Borisova, H.O. Yagmurov // Problems of dentistry. 2022. T. 18. No. 1. pp. 154-158 (pp. 27, 34) (5/3).

4. Borisova, E.G. Results of clinical assessment of the condition of removable dentures made of thermoplastics / E.G. Borisova, N.G. Mashkova, A.F. Spesivets, H.O. Yagmurov // Problems of dentistry. 2022. T. 18, No. 3. pp. 139-143 (p. 27) (5/3).

5. The influence of neurological complications arising after dental interventions on the quality of life of patients / E.G. Borisova, E.S. Griga, H.O. Yagmurov // Bulletin of the Russian Military Medical Academy. 2018. No. 1(61). pp. 18-21 (p. 69) (3/1).

6. Patent for invention No. 2795869 Russian Federation, MPC A61K 31/08, A61P1/02, A6/N 5/06. Method for preventing relapses of chronic diseases of the oral mucosa after orthopedic treatment with removable orthopedic structures: No. 2022109192: application. 04/06/2022: publ. 05/12/2023 / Borisova E.G., Yagmurov H.O., Mashkova N.G., Bozhchenko A.P., Griga E.S. Applicant Military Medical Academy named after. S.M. Kirova. – 9 s. - Text: direct (pp. 27, 53) (9/5).

7. Immediate dentures using the drug “Polyoxidonium” as one of the methods of rehabilitation of patients with planned implantation according to the

all-on-4 system with chronic recurrent aphthous stomatitis / E.G. Borisova, N.G. Mashkova, A.F. Spesivets, Kh.O. Yagmurov, M.K. Fedichkina // In the collection: Dental spring in Belgorod -2022. Collection of articles of the International Scientific and Practical Conference. Belgorod, 2022. pp. 160-162.

8. Barrier-protective capabilities of the oral mucosa of patients suffering from chronic recurrent aphthous stomatitis and using removable dentures / E.G. Borisova, Kh.O. Yagmurov, A.A. Komova, A.F. Spesivets // In the collection: Theoretical and practical issues of clinical dentistry. Collection of scientific papers of the All-Russian Scientific and Practical Conference. St. Petersburg, 2023, pp. 17-19.

9. Forensic medical assessment of neurological complications arising after dental procedures / Borisova E.G., Griga E.S., Tolmachev I.A., Yagmurov Kh.O. // In the collection: “Current issues of maxillofacial surgery and dentistry.” collection of scientific papers of the All-Russian Scientific and Practical Conference. St. Petersburg, 2017. pp. 83-84.

10. Clinical and forensic aspects of the use of anesthetics in outpatient dental practice / E.G. Borisova, E.S. Griga, H.O. Yagmurov // Dental practitioner. 2017. No. 4. pp. 42-43 (pp. 34, 51).

11. Study of the level of comfort and quality of life of patients with defects of hard dental tissues with IROPD of more than 50%, depending on work activity / E.G. Borisova, M.K. Fedichkina, N.G. Mashkova, H.O. Yagmurov // In the collection: Dental spring in Belgorod -2022. Collection of articles of the International Scientific and Practical Conference. Belgorod, 2022. pp. 246-248.

12. Consequences of improper provision of dental care / Borisova E.G., Griga E.S., Yagmurov H.O. // In the collection: Bulletin of scientific conferences. Tambov: 2017. N 9-1(25). pp. 25-27.The author analyzed foreign and domestic literature, personally developed a method of examination, orthopedic treatment for partial secondary adentia with concomitant pathology (chronic recurrent aphthous stomatitis) in 127 patients; the dissertation also analyzed the results of the study, carried out statistical processing of the obtained

indicators, formulated conclusions and gave practical recommendations. The share of participation of the dissertation was: in conducting clinical examination methods - 100%, laboratory - 58%, in statistical data processing - 95%.

The basic provisions for the thesis defence:

- The need to improve orthopedic dental care for patients with chronic recurrent aphthous stomatitis is dictated by the high need for prosthetics in the partial absence of teeth, the unsatisfactory quality of primary prosthetics performed using outdated technologies and dental materials, as well as a low level of motivation for dental treatment.
- In the prosthetic treatment of patients with partial absence of teeth on the background of chronic recurrent aphthous stomatitis, the use of applications to the elements of the lesion of the oral mucosa of the plates "Diplen Denta LH" 2 times a day for 7 days, Vinilin balm: 2 times a day for 5 days for 20 minutes, sessions of low-intensity LED radiation on the affected areas of the oral mucosa.
- The pharmacological tool "Azoximer bromide", which has an immunomodulatory effect, allows to normalize the levels of local protection and microbiocinosis of the oral cavity, as well as to shorten the time of adaptation to partial removable prostheses in chronic recurrent aphthous stomatitis.
- The developed recommendations on the provision of orthopedic dental care to patients with chronic recurrent aphthous stomatitis with partial absence of teeth make it possible to increase the effectiveness of complex treatment and can be used in the medical and educational process when teaching students and trainees of dental specialties.

CHAPTER 1. LITERATURE REVIEW

1.1. The frequency of occurrence of chronic recurrent aphthous stomatitis in the structure of dental diseases

To date, chronic recurrent aphthous stomatitis (CRAS) is considered to be an unresolved medical problem, causing certain problems in the treatment of the disease, as well as in the lives of patients, making it difficult to swallow, eat and speak [2, 3, 24, 155]. According to the data of domestic and foreign authors, the incidence of CRAS ranges from 10% to 40% of the population, depending on the region of residence, age groups and gender [30,39,134,159]. Therefore, the development and improvement of new etiological and pathogenetic theories of the disease, new treatment methods is more relevant than ever [26, 132,168].

To date, some dental scientists have put forward several theories of the etiological factors of the occurrence of CRAS, while others are developing new methods of therapy, trying to alleviate the clinical symptoms of the disease [1, 67, 84,140].

The interest of dentists of various specialties in this section is also due to the fact that to date there is no full-fledged comprehensive prevention of CRAS, especially in patients with general somatic diseases and the possibility of malignancy of certain nosological forms [16, 19, 24, 28, 48, 52, 64, 105].

In confirmation of the above, statistical data can be provided on the "specific weight" of oral mucosa diseases in the structure of the referral of patients with chronic recurrent aphthous stomatitis to the dental clinic of the Military Medical Academy named after S.M. Kirov from 2016 to 2020 from the total number of patients is: 2016 - 2.87%, 2017 – 4.23%, 2018 – 3.69%, 2019 – 4.47%, 2020 – 4.81%.

The incidence of CRAS increases with age. According to a number of researchers, these are middle-aged and elderly patients who, as a rule, have a number of risk factors and somatic diseases [60, 62, 65, 82, 111,113].

In addition, a fairly high percentage of patients have, in addition to the appearance of CRAS in the oral cavity, various orthopedic pathologies. Such as complete or partial absence of teeth, exacerbating the clinical course of aphthous stomatitis and reducing their quality of life [7, 8, 35, 62, 64, 101, 104].

Thus, the prevalence of chronic recurrent aphthous stomatitis, the frequency of occurrence in patients with tooth loss requires a personalized approach to the patient when providing prosthetic treatment.

1.2. The status of the issue of providing orthopedic dental care to patients with chronic recurrent aphthous stomatitis

Problematic issues of providing comprehensive orthopedic dental care for diseases of the oral mucosa and the red border of the lips are currently covered in many literary sources [6, 8, 12, 15, 16, 25, 30, 33, 52, 62, 68, 146].

In the domestic and foreign literature, the possibilities of orthopedic treatment for chronic recurrent aphthous stomatitis are presented only in selected works [12, 15, 25, 30, 33, 144, 147,153]. Research and practical long-term observations by a number of authors inform that sometimes the source of CRAS is poorly stocked dentures, sharp edges of teeth, wisdom teeth tilted towards the cheek, clamps and non-compliance with oral hygiene, which contribute to the formation of erosions and ulcers on the mucous membrane [12. 58, 66, 122, 166].

According to other authors, [115, 117, 164, 168, 177] any local injury to the oral mucosa should be considered as a provoking or disease-supporting factor, and not as an etiological one.

Thus, any chronic injury to the oral mucosa, especially mechanical injury with sharp edges of teeth or dentures, must be considered one of the factors that must be taken into account in the occurrence of CRAS and possible malignancy [67, 68, 76].

The issue of preparing the oral cavity for dental prosthetics in case of CRAS is of great practical importance and is not sufficiently reflected in the specialized literature [57, 64, 70-72].

Few works on prosthetics in chronic recurrent aphthous stomatitis tells about prosthetic treatment only at the stage of remission of the disease [61, 71, 73, 83, 123]. The authors believe that "... in the presence of CRAS, wearing dentures leads to an exacerbation of the process, and it is more difficult to treat", since there is no stable positive result, therefore it is necessary to take a more careful approach to examining the patient and drawing up a plan for preparing the oral cavity for prosthetics [57, 64, 65].

In a number of works devoted to this problem [36, 49], a significant place is given to the sanitation of the oral cavity and the observance of hygienic measures for the care of prostheses, since, according to the authors, the resistance of the mucous membrane and the body to pathogenic microorganisms inhabiting the oral cavity increases [30, 31].

We believe that rational prosthetics are not only possible, but also necessary for the treatment and prevention of the disease of CRAS. But with a competent professional approach to this issue, it is necessary to choose the appropriate material and design of the prosthesis, which eliminate the possibility of injury to the oral mucosa [23, 82, 136].

When preparing the oral cavity for prosthetics in patients suffering from CRAS, it is important to determine the scope and features of comprehensive orthopedic care [23, 28].

A number of authors recommend observing the following when providing orthopedic dental care to patients with chronic recurrent aphthous stomatitis: it is necessary to eliminate possible traumatic moments, correctly restore the height of the lower face [6, 18, 22, 23].

To prevent exacerbations during the preparation for dental procedures, researchers suggest treating the oral cavity with gels or solutions containing an anesthetic (5% lidocaine solution), antiseptic mouthwashes (potassium permanganate solution (1:1000), 3% hydrogen peroxide solution, 0.05% chlorhexidine solution) [6, 12, 13].

In many literary sources, when prosthetics with removable plate prostheses of extensive defects in dentition or complete absence of teeth, it is necessary to use two-layer bases made of colorless plastic with an elastic lining made of materials based on filled A-silicone rubber [3, 4, 19, 87]. A soft plastic lining can be located differentially only in areas of localization of lesions of the mucous membrane or along the edge of the base. This contributes to the uniform distribution of chewing pressure on the mucous membrane of the prosthetic bed, dampens chewing pressure, prevents or reduces pain, improves fixation of prostheses and normalizes the timing of adaptation to them, which leads to an increase in chewing efficiency by 20-25% compared with conventional prostheses [108,109, 119].

Some authors [91, 123, 129] note the need to use unloading impressions.

Thus, there are few literature data on the specifics of providing orthopedic dental care to patients with chronic recurrent aphthous stomatitis, which determines the need for further research on this issue.

1.3. Ways to accelerate adaptation to removable dentures

The degree of satisfaction with removable dentures, including the quality of speech, eating, swallowing and other indicators included in the general concept of quality of life, also implies psychological adaptation. [7, 8, 35, 62, 64].

Currently, a number of authors propose various ways to determine the adaptation of patients to removable dentures [43, 62, 73, 101, 104].

V.K. Leontiev and V.B. Smirnova [91, 95] proposed a method for determining adaptation to dentures, which consists in collecting saliva from the patient for 20 minutes at different periods of prosthetic treatment. The ratio of the total amount of saliva to the time during which saliva was collected is considered the rate of salivation. In addition, the calcium content is determined by the trilometric method, also proposed by these authors. But this method is quite complicated, requires the use of sophisticated equipment and chemical reagents for measurements [59].

There is a technique for assessing patients' adaptation to prostheses by determining the intensity of staining using a pre-calibrated typographic multitonal yellow tint scale [55, 58]. 10-12 g (teaspoon) of sour cream, previously tinted with food saffron, is placed in the oral cavity of the subject. The patient mixes the mixture with his tongue for 10 seconds and swallows, then rinses his mouth three times with distilled water, spits this water into a measuring vessel.

Thus, it is possible to trace the function of swallowing after prosthetics. The period determining the adaptation to prostheses is the period in which the amount of remaining sour cream in the oral cavity becomes the same as in persons with a healthy oral cavity [55, 58].

Unfortunately, this technique allows us to study only the swallowing function, and does not take into account not only functional changes in the dental apparatus, but also the subjective reaction of the body to existing prostheses. Therefore, the objectivity and reliability of this technique does not provide a complete assessment of the function of swallowing and adaptation.

Unsatisfactory fixation of prostheses under unfavorable conditions of the prosthetic bed quite often complicates the adaptation of patients to prostheses [37, 40, 140, 160]. During prosthetic treatment, it is necessary to ensure full-fledged chewing, swallowing and speech functions to improve the quality of the patient's dental health, and to the full extent of the quality of life [13, 32, 44, 61]. Therefore, orthopedic care in case of partial absence of teeth requires further development, based on scientific and practical recommendations.

According to a number of authors, in order to exclude prosthetic stomatitis of traumatic origin, it is necessary to fully match the surface of the prosthesis, the edges to the border and the relief of the prosthetic bed [16, 25, 29, 30, 171].

In the process of adaptation, it is necessary to take into account the toxic and allergic effect of polymers on the oral mucosa. Thus, K.D. Altynbekov [2018] and Kozyreva A.K. [2017] propose the use of insulating materials, considering that "... titanium metallization of the bases of removable prostheses reduces the migration of residual monomer from the inner surface of the acrylic base", increasing not

only the strength of plastics, but also reducing their bacterial contamination [37]. The authors believe that this increases the duration of use of the prosthesis and reduces the number of repeat visits [37, 40, 113, 117, 185].

There is a technique for silvering an acrylic prosthesis, which, according to the authors [55, 66], accelerates the epithelialization of the mucous membrane of the prosthetic bed, thereby reducing the number of complaints of discomfort when using the prosthesis. Unfortunately, the technique was not widely used due to the complete disappearance of the silver film from the surface of the prosthesis after 2-3 weeks. Therefore, it is necessary to re-metallize, which is associated with additional material costs for both patients and dental clinics [55].

To reduce mechanical irritation of the oral mucosa, a number of authors suggest manufacturing lightweight types of partial removable prostheses [46, 47, 58, 60].

Currently, technologies for the manufacture of removable plate prostheses are used by injection molding, in which a modified insulating varnish is applied to the inner surface of the base of the prosthesis. This, according to some authors, improves the transmission of the microrelief of the mucous membrane of the prosthetic bed [91, 98, 99, 110, 113].

Publications of domestic and foreign researchers show quite effective results when using elastic materials for the manufacture of removable prosthesis bases [102, 108, 116, 119, 122], especially under unfavorable conditions of the prosthetic bed. In particular, in chronic recurrent aphthous stomatitis. At the same time, the number of complications arising from the use of removable plate prostheses is significantly reduced and the chewing efficiency increases to 20 -25% [102, 108, 116, 119, 122].

To increase the effectiveness of adaptation to removable prostheses in case of CRAS, a number of authors suggest using physiotherapy methods: magnetic therapy and low-intensity laser radiation [12, 13, 14, 70, 71]. Butunfortunately these methods remain only the method of choice and eliminate the anti-inflammatory problem more often [10].

For people with intolerance to acrylic plastics, it is proposed to use thermoplastic materials that have a less aggressive composition and "improve the condition of the mucous membrane of the prosthetic bed" [63, 72, 86, 102, 141].

Atrophic processes in the mucous membrane, leading to impaired functions of chewing, speech, swallowing, changes in the height of the lower face, entail functional disorders of the temporomandibular joint [69, 71, 118, 139, 181]. At the same time, the appearance of a person deteriorates, creating mental trauma [119, 124].

To solve the problems of prosthetic treatment described above, a fairly large number of modifications of partial removable plate prostheses have been proposed [112, 129]. The researchers proposed the improvement of technologies and the use of new materials for manufacturing [55, 59, 63, 69, 85, 86, 142, 153]. The scientific and practical search for the optimal way to improve the quality characteristics of the bases of removable plate prostheses continues [49, 89, 92, 94].

Thus, the literature data on non-pharmacological methods of accelerating adaptation to removable prostheses are numerous and each has certain advantages and disadvantages. An analysis of the literature allows us to conclude that it is necessary to continue research in the direction of finding ways to improve the adaptation of patients with chronic recurrent aphthous stomatitis to removable prostheses.

For the treatment and prevention of complications from the tissues of the prosthetic bed, clinicians and pharmacologists are developing various pharmacological agents that allow them to have "anti-inflammatory, antimicrobial, antiallergic and immunomodulatory effects" [15, 38, 52, 60, 62].

In the last decade, a rather promising direction in the prevention of complications has been the use of bio-soluble medicinal films and adhesives that improve the fixation of removable prostheses and shorten the adaptation time [47, 50, 71, 84]. In addition, the inclusion of these drugs in the treatment complex contributes to the early restoration of impaired immune links [62, 88, 90].

Weakening of the immunity of local immunity and violation of the protective properties of oral fluid quite often leads to disruption of the adaptation process after prosthetics with partial removable prostheses [6, 12, 39]. Therefore, in the last decade, many researchers have proposed using drugs to enhance anti-inflammatory and reparative processes in the oral cavity during the cycle of prosthetic treatment and after [24, 38, 84].

To reduce complications from the tissues of the prosthetic bed in patients using removable prostheses, the effectiveness of such pharmacological drugs as "Gepon", "Lycopid", "Immudon" was studied [65, 91].

In order to eliminate inflammatory phenomena on the mucous membrane of the prosthetic bed, a number of authors suggest using ROCS toothpastes for two weeks, using them to maintain the hygienic condition of removable dentures [128, 132].

There is information about the successful use of "Diplen-dent" adhesive films during the period of adaptation to removable prostheses, as well as for faster healing of morphological elements in the area of the prosthetic bed [72, 73, 85].

In a number of literature sources, the use of such ointments as "Methyluracyl", "Solcoseryl", "Butadione" has been proposed to reduce swelling and pain during prosthetics with partial removable prostheses [63, 67, 70].

It has been established that the use of antiseptic tablets and gels for the care of removable plate prostheses, such as "Protefix", "Corega", "Curaprox" significantly improves the hygienic condition of the oral cavity and promotes the therapy of aphthous manifestations from the prosthetic bed [63, 67, 78, 85, 127, 142].

Thus, the analysis of domestic and foreign literature has shown that the problem of studying tissue reactions from the prosthetic bed during prosthetic treatment with partial removable prostheses, in the presence of chronic recurrent aphthous stomatitis in patients, is covered in quite a variety of ways and remains under the close attention of researchers. In our opinion, one of the most promising directions in this regard is to study the issue of functional and immunological

disorders during the period of adaptation to removable prostheses and, accordingly, the integrated use of pharmacological drugs for more effective treatment and prevention.

1.4. The state of local immunity factors of the oral cavity and methods of correction of the immune status in patients with chronic recurrent stomatitis in need of dental orthopedic care

The reflection of the adaptive processes that occur after partial removable prosthetics can be traced by the immunological parameters of the oral fluid [51, 53, 56, 63, 112].

As is known, the oral immune protection system is understood as a variety of non-specific and specific factors of the oral fluid that provide effective protection against pathogens [51, 53, 56, 76, 111, 154, 186]. These include lysozyme, immunoglobulins s-IgA, Ig A, IgG, neutrophils and others with pronounced bactericidal and antiviral properties. A decrease in the indicators often leads to various allergic and inflammatory diseases of the oral mucosa [86, 87, 90, 91, 108, 112, 129, 134].

According to the latest data from researchers, "long-term manifestations of chronic recurrent aphthous stomatitis indicate the failure of a specific stage of the immune response due to structural and functional defects of the immune system" [113, 114, 134, 141, 148]. Therefore, when conducting prosthetic treatment of patients with chronic recurrent stomatitis, correction of identified "structural and functional disorders of the immune system is of paramount importance" [37, 51-53, 113, 161, 181].

A number of authors report a decrease in the content of lysozyme, immunoglobulins A, M, G in oral fluid and immunoglobulins in the blood, an increase in the content of circulating immune complexes in patients with intolerance to acrylic dentures [63, 83, 79, 87, 113, 176]. There is evidence that the changes described above in the oral fluid depend on the number of microorganisms on the surface of the prostheses [37, 103, 112, 113, 148].

According to the researchers, the introduction of a removable orthopedic structure into the oral cavity precisely in the early stages of use leads to an increase in the concentration of s-IgA, which is a "compensatory and adaptive reaction in response to the weakening of the barrier-protective capabilities of the mucous membrane" [51, 52, 54, 55, 78, 79, 113]. At the same time, there is an "increase in the levels of the general immune and secretory, intraoral level of protection in response to the weakening of the protective function of the oral mucosa" [51, 52, 54, 55, 78, 79, 113].

But, if the patient uses removable dentures for a long time, there is a violation of the homeostasis of the oral cavity, in which the protective mechanisms of the oral mucosa decrease: there is a decrease in the concentration of s-IgA and lysozyme, and, as a result, an increase in the number of opportunistic microorganisms [39, 41, 45, 47, 54, 55].

There is evidence that when using "Fluorax" plastic for partial removable prosthetics, the restoration of the s-IgA level in mixed saliva is observed already by "the third month after prosthetics, whereas when using "Etacril" plastic, this indicator does not recover" [39, 47, 146].

In recent years, it has been proposed to include "studies of oral fluid parameters: lysozyme, neutrophils, s-IgA, R-proteins in blood serum, microflora, oral cavity" in the algorithm of examination of the patient before the start of orthopedic treatment [12, 16, 21, 37, 45, 51, 148].

There are numerous works in the domestic and foreign scientific literature highlighting that in patients with intolerance to acrylic dentures, the level of immunoglobulins IgA, IgM, IgG in the blood serum decreases and the content of circulating immune complexes increases [54, 55, 68, 77, 113, 139, 141]. It is noted that patients "with intolerance to acrylic dentures are characterized by inhibition of the activity of the T-immune system, a decrease in the content of immunoglobulins, including s-IgA" [113, 139, 141].

In addition, it was found that "lysozyme activity decreases in saliva several times under the influence of acrylic plastics" [113, 144, 149, 161], and microbial

colonizations that appear after prosthetics also depend on the dental material used. [73, 109, 113, 117].

Numerous studies on the complex and not fully disclosed pathogenesis of chronic recurrent aphthous stomatitis indicate the importance of immune disorders in the mechanism of development of this disease [31, 72, 73, 109, 113, 117].

In the occurrence of chronic recurrent aphthous stomatitis, quite a lot of attention is paid to violations of local and general cellular and humoral immunity [12, 16, 18, 31, 72, 73, 109, 113]. And this theory is the most scientifically sound, since with insufficient function of the secretory apparatus of the digestive tract, "cellular immunodeficiency of the oral mucosa occurs" [51, 67, 96, 108, 112, 117, 167].

Unfortunately, in modern dental practice, the appointment of immunocorrecting drugs is often stereotypical, without revealing the mechanisms of action of the prescribed drug [117, 121, 134]. The researchers claim that laboratory indicators cannot always reveal changes in the immune protection of the oral cavity and consider it possible, and even advisable, to prescribe immunomodulatory drugs to the patient, even if "an immunodiagnostic study does not reveal significant deviations in the immune status" [72, 141, 148, 158, 173]. Therefore, a very important direction in the treatment of chronic recurrent aphthous stomatitis is the development and implementation of immunocorrection algorithms that ensure "restoration of the number and functional activity of immunocompetent cells, as well as normalization of the interleukin immunoregulatory system" [73, 113, 148, 158, 173].

In modern scientific literature, not only factors of cellular and humoral immunity in blood and saliva are studied, but also possible routes of administration of immune drugs, schemes of their use, clinical and laboratory criteria are being developed that will allow individualizing the appointment of immunocorrectors and evaluating their therapeutic effectiveness [54, 61, 67, 75, 84, 181]. For dental specialists, pharmacological preparations that have an effect directly in the oral

cavity, have a minimum of side effects and do not cause allergic reactions in patients using removable dentures are of particular interest [47, 51, 53, 127].

Thus, the analysis of literature data on the provision of orthopedic dental care to patients with chronic recurrent aphthous stomatitis and partial absence of teeth indicates the need to improve the quality of prosthetics, the relevance of solving issues of adaptation to prostheses, reducing the recurrence of diseases caused by orthopedic structures remains. Therefore, it is relevant to search for an optimally effective combination of the removable prosthesis design and pharmacological effects on local immunity factors, as well as the development of technology for their application to improve adaptation to removable prostheses.

CHAPTER 2. MATERIALS AND METHODS OF RESEARCH

The scientific research is based on the principles of evidence-based medicine. The rules of high-quality clinical practice were fully complied with(Good Clinical Practice, GCP) [72].

The study design is an open cohort prospective controlled clinical trial with elements of retrospective analysis, which included 127 patients with partial absence of teeth suffering from chronic recurrent aphthous stomatitis, based on the dental clinic of the Department of General Dentistry of the Kirov Military Medical Academy and the Stellit Clinic in St. Petersburg.

The subject of the study is a patient suffering from CRAS and undergoing treatment at an orthopedic dentistry clinic for partial secondary adentia.

The subject of the study is the optimization of methodological principles for the comprehensive orthopedic treatment of patients with partial absence of teeth against the background of chronic recurrent aphthous stomatitis in order to provide high–quality orthopedic dental care and improve their quality of life.

The study was unanimously approved by Decision No. 279 of 06/27/2023 of the Independent Ethics Committee at the Kirov Military Medical Academy of the Ministry of Defense of the Russian Federation.

2.1 General characteristics of patients who have sought orthopedic help and have a history of chronic recurrent aphthous stomatitis

Clinical, clinical and laboratory examination and dynamic follow-up were performed for 127 patients with partial absence of teeth with chronic recurrent aphthous stomatitis on the basis of the dental clinic of the Department of General Dentistry of the Kirov Military Medical Academy and the Stellit clinic in St. Petersburg. These were persons of both sexes: 57 people were women (44.88%) and 70 people were men (55.12%) (Figure 1).

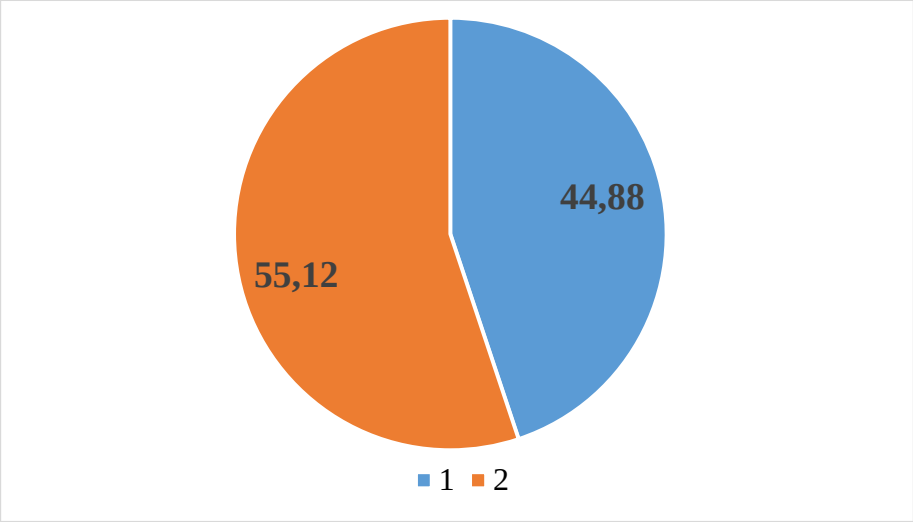

Figure 1. Distribution of examined patients by gender, %
(1- men, 2 – women)

All patients were divided into the following groups:

The 1st group consisted of patients suffering from recurrent aphthous stomatitis, who had partial removable dentures made of dental material "Deflex" (reg.ud. RZN 2014/2250), (42 people) and receiving traditional local treatment of HRAS (antiseptic treatment of morphological elements of the oral cavity and ointment "Methyluracyl 10%")[14];

the 2nd group included patients (45 people) who, in parallel with the manufacture of prostheses from the dental material "Deflex" (reg.ud. RZN 2014/2250), used a method developed and patented by us for the treatment of CRAS, including medicinal (applications to the elements of the lesion of the oral mucosa "Diplen Denta LX" (reg.ud. No. FSR 2008/02392) 2 times a day for 7 days; Vinilin (reg.ud. LS-000216) 2 times a day for 5 days, exposure time of 20 minutes and physiotherapy (device for local irradiation with unpolarized pulsed red light "Svetozar" (reg.ud. No.RZN 2014/1398) 1 minute for each element of the lesion of the oral mucosa for 5 days (45 people) [80];

Group 3 – patients suffering from recurrent aphthous stomatitis, who, after applying dentures made of dental material "Deflex" (reg.ud. RZN 2014/2250), medication and physiotherapy, were prescribed the drug "Azoximer bromide" (reg.

ud. RNo. 002935/4) sublingually 1 tablet 2 times a day (Russia) (40 people) [80].The distribution of patients by age and location of tooth absence is shown in Table 1.

Table 1 - Distribution of patients by age and location of missing teeth

Groups	from 42 to 60 age		from 61 to 80 age	
	Upper jaw	Lowerjaw	Upper jaw	Lowerjaw
1-stgroup	4 (3,15%)	8 (6,3%)	14(11,24%)	16(12,6%)
2-ndgroup	5 (3,94%)	7 (5,52%)	15(11,61%)	18 (14,62%)
3-rdgroup	8 (6,29%)	9(7,07%)	11(8,66%)	12(9,44%)
Total 127-100%	17(13,38%)	24(18,89%)	40(31,51%)	46(36,22%)

As follows from Table 1, 82 people (64.57%) had partial tooth loss in both jaws, 45 people (35.43%) had partial tooth loss in one (upper or lower) of the jaws, which is shown in Figure 2.

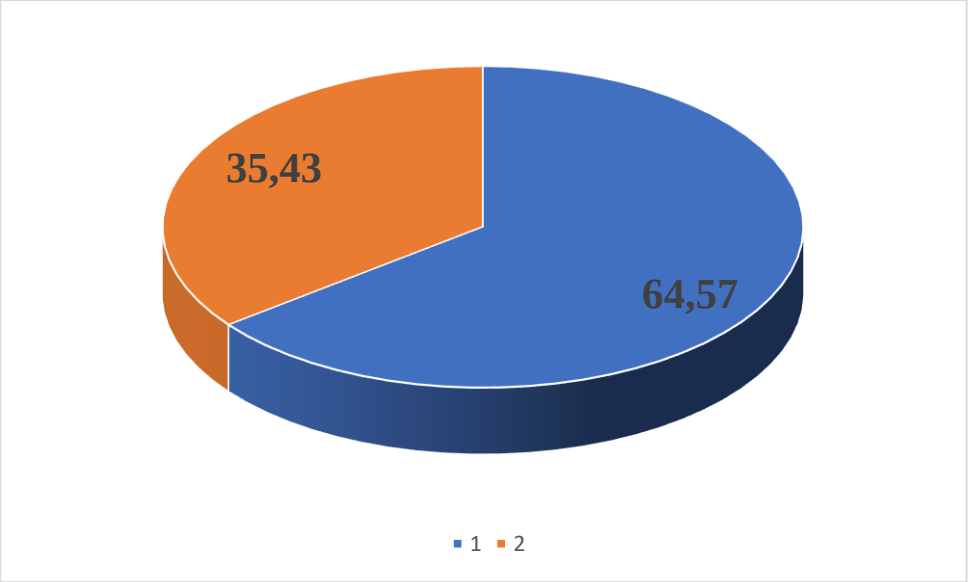

Figure 2. Loss of teeth depending on the jaw (1 – partial loss of teeth in both jaws, 2 - partial absence of teeth in one of the jaws)

Removable prosthesis structures made of "Deflex" material were made for all 127 patients.

The examined patients had a history of not only chronic recurrent aphthous stomatitis, but also concomitant somatic pathology, which is reflected in Table 2.

Table 2 - The most common somatic pathology in the examined patients

Concomitant diseases	Men (quantity, %)	Women (quantity, %)
Diseases of the gastrointestinal tract (DGT)	37 (52,86)	33 (57,89)
Diseases of the cardiovascular system (CVD)	13 (18,57)	7 (12,28)
Diseases of the endocrine system (ES)	2 (2,87)	5 (8,77)
Diseases of the genital area and the immune system	18 (25,7)	12 (21,06)

As can be seen from table 2, most of the patients we examined with chronic recurrent aphthous stomatitis had concomitant pathology from the digestive system (more than 57%) of the total number of patients: gastritis, gastric ulcer, cholecystitis, impaired liver function, a fairly high percentage (more than 25%) of patients suffered from diseases of the genital sphere and immune system systems [62].

Before orthopedic treatment, all patients underwent oral sanitation (by a dentist and periodontist), if necessary, therapy for concomitant somatic pathology.

2.2. Clinical methods of examination of patients with chronic recurrent aphthous stomatitis

When conducting subjective and objective research methods. ethical standards were observed, and each patient gave written informed consent to participate in the study. The plan of orthopedic treatment of patients with CRAS was coordinated with a dentist, a dental surgeon, internists, and actually partial removable dentures began upon reaching the remission period of CRAS [123].

Subjective research methods:

- • Anamnesis collection included: complaints and subjective conditionofthe patient, anamnesis of the disease, whether prosthetic treatment and its results were previously performed, anamnesis of life;
- Objective research methods:

- • During external examination, the condition of the nasolabial fold of the upper lip, the location of the corner of the mouth, the line of closure of the lips, the condition of the red border of the lips, the location of the chin fold and the height of the lower face were recorded;
- • During the examination of the oral cavity organs, the relationship of the dentition, the presence of defects in them (according to Kennedy) were evaluated, and the oral mucosa was evaluated (according to Supple), as well as the atrophy of the alveolar part of the jaws (according to Doinikov). An obligatory stage in planning primary or repeated prosthetic treatment was the production of control and diagnostic models. If the patient had partial removable dentures, then their quality and the dental materials from which they were made were evaluated. The limitation period of manufacture, the consistency of use, the level of aesthetics and functionality were taken into account [44, 52, 82].
- • The dental components of the quality of life were evaluated dynamically according to the index "Profile of the impact of dental health" using questionnaires on the quality and comfort of patients' lives– ONIR-14;
- • X-ray examinations (OPTG) were carried out according to generally accepted methods with a closed and open mouth on an X-ray dental digital panoramic Smart Plus device with a CT scanner and a cephalostat (reg. ud No. RNZ 2020/13108), according to the results of which the condition of the teeth, the presence of dentition defects and their extent were assessed;
- • Laboratory (immunological examination of mixed saliva, bacteriological examination).
- • An examination card developed by us was compiled for each patient (Application 1).

In order to better understand the relationship between the manifestations of chronic aphthous stomatitis and violations of the dental system, the following points were clarified: the sequence of violations of the dental system, during which time dentures were used and what is their quality (according to the patient), the time of prosthetics, whether dental prosthetics or violation of the integrity of teeth

and dentition caused the development of CRAS, when and when under what circumstances did the first morphological elements appear on the oral mucosa, whether treatment was carried out and what, before contacting the clinic of the Department of General Dentistry of the Kirov Military Medical Academy and the Stellit clinic, what are its results; remissions and relapses and their duration; transferred and concomitant diseases; the patient's condition in a given period of time; the regularity of oral care and prostheses; bad habits, the state of the nervous system. In individual conversations, the general attitude of the patient suffering from CRAS to maintaining dental health and psychological attitude to prosthetic treatment, including taking into account financial possibilities, were clarified.

After an external examination of the face, an examination and examination of the oral cavity were performed.In determining the localization and extent of dentition defects, we used the Kennedy classification, well-known and used in practical dentistry, according to which small (in the absence of 1-3 teeth), medium (in the absence of 2-3 teeth) and extended (in the absence of more than 3 teeth on the jaw) defects are distinguished. (Table 3).

Table 3 - Distribution of dentition defects in groups depending on the type of prosthetic jaw according to the Kennedy classification

Groups	Jaw	1-stclass n(%)	2-ndclass n(%)	3-rdclass n(%)	4-thclass n(%)
1-stgroup	Upperjaw	12(28,57%)	8(19,5%)	1 (2,38%)	0
	Lowerjaw	13(30,95%)	7(16,67%)	1(2,38%)	0
2-ndgroup	Upperjaw	14(26,67%)	5(11,11%)	1(2,22%)	0
	Lowerjaw	16(35,56%)	7(15,56%)	2 (4,44%)	0
3-rdgroup	Upperjaw	10 (25,0%)	5(12,5%)	2(5,0%)	0
	Lowerjaw	13(32,5%)	7 (17,5%)	3(7,5%)	0
Total	127-100%	78(61,42%)	39(30,71%)	10(7,87%)	0 (0%)

Before starting comprehensive orthopedic treatment, it was necessary to determine the clinical and anatomical conditions for partial denture replacement in patients with chronic recurrent aphthous stomatitis and to assess the nature and degree of atrophy of the toothless area of the alveolar part of the jaws. Thus, when examining the upper jaw, the severity of the tubercles of the upper jaw, the shape and height of the hard palate, the severity of the palatine torus, the condition of the median suture of the hard palate were assessed, the presence of a chin-lingual torus, the severity of internal oblique lines, the degree of severity and the place of attachment of the frenules of the upper and lower lips were taken into account in the lower jaw. During palpation, the presence of exostoses, mobility and elasticity of folds and buccal-alveolar strands of the mucous membrane of the prosthetic bed were determined.

During the examination of the oral cavity, the nature of the morphological elements of the mucous membrane, the timing of their appearance, the duration of their existence, the timing of epithelialization before and after prosthetics were studied.

Special attention was paid to the study of the oral mucosa, especially changes in the background of chronic aphthous stomatitis. During her examination, coloration was noted (taking into account the patient's age and profession), the degree of moisture, puffiness, the presence of morphological elements, their shape, size, quantity, localization. The condition of the mucous membrane under the prosthesis was taken into account.

The general characteristics of the mucous membrane of the prosthetic bed were evaluated according to the classification by Supple.

After applying the prosthesis, the condition of the mucous membrane of the prosthetic bed was assessed in dynamics: on the first (irritation phase), seventh (period of partial inhibition – the second phase of adaptation to the prosthesis) and 30th day after prosthetics (phase of complete inhibition - the end of adaptation to the prosthesis). The elements of the lesion of the oral mucosa, the timing of their appearance, epithelialization, and duration of existence were studied.

54 patients (42.51%) needed primary prosthetics for partial absence of teeth, who had previously refused prosthetic treatment due to carcinophobia, lack of faith in the success of orthopedic treatment and financial insolvency.

Patients with CRAS previously had 28 bridge prostheses installed, including stamped-soldered ones – 15 (53.57%) and metal–plastic ones – 13 (48.43%); 113 single crowns, including stamped ones – 49 (43.37%), solid-cast ones - 39 (34.51%), all–ceramic ones - 25 (22.12%) (Figure 3). An interesting fact is that 60.03% of stamped and stamped-soldered bridges were made with titanium nitride coating.

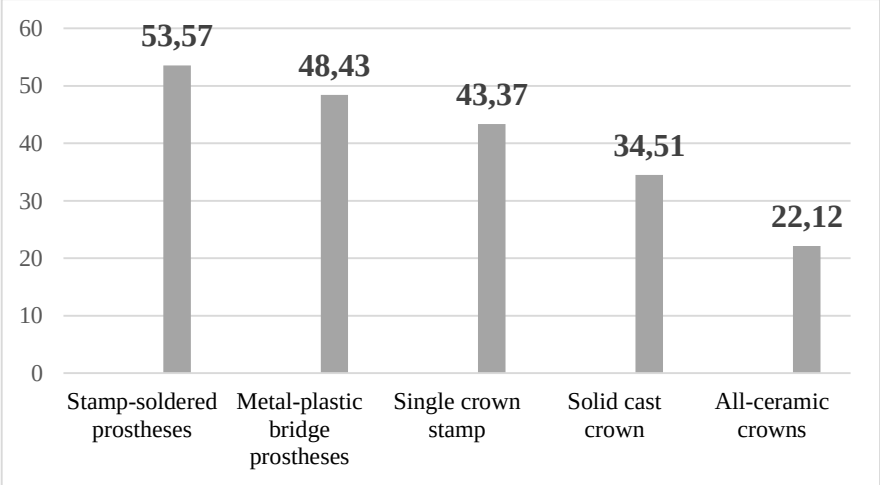

Figure 3. Characteristics of previously manufactured non-removable dentures in patients with CRAS during initial treatment

We found that only 42 (33.07%) patients with CRAS before the start of prosthetics in our clinics were registered with a dentist and were referred to an orthopedic dentist after completion of conservative treatment with remission, and 85(66.93%) patients were not registered, self-medicated.

2.3. Laboratory immunological methods for the study of indicators of local immunity of the oral cavity

The material for the study of immunoglobulins was unstimulated mixed saliva obtained before the morning meal. Laboratory immunological studies were

conducted at the Medical Laboratory of Immunological Research in St. Petersburg (www.liislab.ru)

The determination of IgA, IgG, s-IgA was carried out in the medical laboratory of immunological research in St. Petersburg (www.liislab.ru) before the start of orthopedic treatment, on day 10, after 1 month, after 2 months. The norm of IgA, Ig G and s-ID levels in human saliva is shown in Table 4.

Table 4 - Limits of fluctuations in immunoglobulin indices found in healthy adults

s-Ig A (mg/l)	IgA(mg/l)	Ig G(mg/l)
370,0-670,0	200,0-1000,0	760,0-1010,0

The phagocytic index (PI) was determined – the percentage of phagocytic neutrophils (%). Normally — 60.0–80.0%, phagocytic number (PN) is the average number of microbes absorbed by one phagocyte (in the medical laboratory of immunological research in St. Petersburg (www.liislab.ru).

Lysozyme activity was determined in mixed saliva (%), which was collected at the same time of day - in the morning, on an empty stomach, without stimulation of the salivary glands, by spitting into a sterile tube. The research was conducted at the Medical Laboratory of Immunological Research in St. Petersburg (www.liislab.ru)

As is known, the normal activity of lysozyme in saliva is 32-40%.

2.3.1. Determination of the coefficient of balance of factors of local immunity of the oral cavity (Cb)

Based on the functional relationships of saliva lysozyme with immunoglobulins (N.I. Tolmacheva, 1987), and also, having norm indicators as a guideline, a single indicator was determined for the integration assessment of the protective function of the body - the coefficient of balance (Cb) of factors of local immunity of the oral cavity.

The integrated indicator (Cb) includes many characteristics of local oral immunity, in particular, the content of serum immunoglobulins of saliva A, G and lysozyme.

The assessment of the state of local immunity of the oral cavity was carried out using the coefficient of balance of local immunity factors (Cb) according to the formula (according to the method of N.I. Tolmacheva, 1987).

The formula 1 for determining Csf was compiled taking into account the functional relationships of lysozyme with immunoglobulins:

$$Cb = IgG \times 40 / IgA \times 0.6 \times Liz \qquad (1)$$

where IgA and IgG are the concentration (mg/ml) of immunoglobulins in the oral fluid, Liz is the activity (%) of lysozyme of mixed saliva, 40% is the conditional norm of lysozyme activity, 0.6 is the IgG/IgA ratio in healthy individuals (Table 5).

Table 5 - Interpretation of the value of the Cb coefficient

Codes	Interpretation
0,1 – 1,0	Functioning of local immunity in healthy individuals
1,1 – 2,0	The risk group for violations of local immunity
from 2,1 andhigher	The unfavorable state of the local immunity of the oral cavity

2.4. Bacteriological research methods

Bacterial examination of the mucous membrane of the prosthetic bed in the process of providing comprehensive prosthetic treatment was carried out in the Invitro laboratory in St. Petersburg. Prior to the study, all patients underwent routine oral sanitation. In the morning, before eating and brushing teeth, a swab was taken using a sterile cotton swab from the oral mucosa and the material was

transported for 2 hours at a temperature of 5 ° C in special test tubes containing a transport medium.

All microorganisms of the mucous membrane of the prosthetic bed that grew on nutrient media before orthopedic treatment and after the manufacture of partial removable prostheses and complex treatment after 14 days and 1 month were taken into account. Sowing from the mucous membrane of the oral cavity is carried out by a quantitative method.

After quantitative determination, microorganisms were identified in the laboratory and the data obtained were processed using a special computer program.

2.5. General characteristics and methods of application of elastic base polymer "Deflex"

In the presence of bone protrusions and exostoses on the prosthetic bed, atrophy of the mucous membrane, hypersensitivity of the mucous membrane and periosteum, the presence of any disease of the oral mucosa, many researchers recommend the use of prostheses lined with elastic polymers [81, 83].

Thermoplastic materials are increasingly used in the manufacture of dentures, as their use reduces pain when applying a partial prosthesis, for example, on acute bone protrusions, and in our case on lesions of the mucous membrane of the cavity in chronic recurrent aphthous stomatitis, so as not to provoke a relapse and help reduce the period of adaptation to prostheses.

Thermoplastics used for prosthetic treatment must meet the following medical and technical requirements: have high elasticity, wear resistance, color fastness and wettability, be non-toxic to the oral cavity and technologically advanced for operation. Currently, they are used to increase the effectiveness of prosthetics with removable dentures and prevent atrophy of the oral mucosa.

There are 4 types of elastic materials for the prosthesis base, depending on the nature of the material: acrylic, PVC, silicone and fluoro-rubber based materials. In our research, the material of choice as a lining material was "Deflex"

(Germany), a basic silicone material that has a high and long–lasting degree of elasticity (Figure 4).

Figure 4. Biologically passive thermoplastics (polyamide) "Deflex"

Unlike polyamides similar in structure, "Deflex" demonstrates high indicators of functional elasticity, which make it possible to classify it as a semi-rigid thermoplastic. This provides the material with a number of advantages (Table 7), since prosthetic structures made on its basis surpass acrylic models by many criteria [Journal of Problems of Dentistry. - 2010. No. 1. - p.25].

In particular, the polyamide in question is resistant to temperature fluctuations, which eliminates hardening and softening of the structure during the process of taking hot or cold food. Minimal porosity and high texture density guarantee the strength and durability of the structure, capable of withstanding significant mechanical loads. "Deflex" reacts minimally with liquids, preventing plaque formation, does not absorb odors and is immune to aggressive coloring pigments. Due to the peculiarities of the material structure, the thickness of the finished prosthesis is almost half that of analogues made of nylon or acrylic, which ensures ease and comfort of wearing, and also eliminates the possibility of speech defects during the adaptation period [https:odos32.ru].

Studies show that prostheses made of polyamide "Deflex" allow you to correctly distribute the chewing load on the dentition, prevent the displacement of

the supporting units and maintain their original position even with significant external influence. It should be noted that this dental material does not cause an allergic reaction and, in combination with a visually imperceptible colorless structure, makes it the optimal choice for prosthetics. Prosthetics with the use of "Deflex" reduces pain with a thinned mucous membrane, which is important when providing orthopedic dental care to patients with chronic recurrent aphthous stomatitis. [115].

The dental material "Deflex" is inert, due to good wetting with oral fluid, it adheres tightly to the mucous membrane, which contributes to high adhesion of the prosthesis to the prosthetic bed and improves its fixation. The positive point is that it does not swell in the oral fluid and does not respond to the microflora of the oral cavity and retains elasticity for 5-7 years.

Table 6 - Injection table of SUPRA SF

Material	SUPRA SF
Injection temperature	260 °C
Melting time	15 min
Exposure time	30 sec
Air pressure	3 Bar

We recommended that patients clean the prosthesis several times daily with a soft toothbrush and a neutral detergent under running water and rinse.

2.6. The method of application and pharmacological features of the drug "Azoximer bromide"

In order to increase the functional activity of the patient's immune system or accelerate the restoration of its impaired functions, drugs that modulate the strength of the immune response are currently being increasingly used, with the help of which it is assumed to provide an adequate immune response to the presence of an infectious pathogen [76].

Azoximer bromide, which is produced according to the international GMP standard, has been widely used for the treatment and prevention of viral and infectious diseases. By increasing the functional activity of cells of the immune system, Azoximer bromide activates the body's immune defenses. In particular, Azoximer bromide induces alpha, beta and gamma interferons, activates neutrophil granulocytes, attracts monocytes (macrophages) to the inflammatory zone, and enhances the synthesis of antibodies against antigens of an infectious nature [76, 79].

The composition of Azoximer bromide is a combination of natural enzymes of plant and animal origin. When ingested, enzymes are absorbed from the small intestine. They enter the general bloodstream upon binding to blood transport proteins [39, 79, 80, 82] and, "accumulating in the area of any pathological process, have immunomodulatory, anti-inflammatory, fibrinolytic, decongestant, antiplatelet and secondary analgesic effects" [79, 82].

The drug "Azoximer bromide" has a positive effect on the indicators of immunological reactivity of the body, regulating "the mechanisms of interferon production, thereby showing antiviral and antimicrobial action." In addition, a change in the course of the inflammatory process was noted, expressed in the limitation of pathological "manifestations of autoimmune and immunocomplex processes." With topical application of Azoximer bromide in a short course, the drug is effective in the treatment of recurrent infections of the mucous membranes of the oral cavity and pharynx [39, 76, 79, 82].

The drug "Azoximer bromide" was administered orally to patients of the third group, sublingually 1 tablet twice a day for two weeks. All patients tolerated the inclusion of "Azoximer bromide" in the treatment complex well, we did not detect any adverse reactions either during immunomodulatory therapy or after it.

2.7. Determination of the psychoemotional state of the personality of a dental patient with CRAS during complex orthopedic treatment and motivation for treatment

To assess the psychoemotional and interrelated physiological status of patients, we used the clinical dental scale developed by domestic dentists [101]. Five basic psychoemotional responses were evaluated at the time of the patient's questionnaire: A – asthenic, D – depressive, Anx – anxious, H – hypochondriac, Hys – hysterical [63, 101].

The severity of these reactions and the level of motivation were determined using a four–point system: 0 – lack of reaction and a very high level of motivation, 1 – mild degree and high level of motivation, 2 – moderate degree and medium level of motivation, 3 - pronounced reaction and low level of motivation (Table 7).

Table 7 - Determination of the psychoemotional state of the patient and the level of motivation for dental interventions

Degree, level of motivation	Description of the psychoemotional reaction, the level of motivation for dental interventions
0 - missing, very high level of motivation	The absence of psychoemotional reactions, complaints correspond to the clinical picture, the behavior is adequate, is configured for dental interventions
1- easy, high level of motivation	The symptoms of the disease are unstable, have a pronounced subclinical character; they are manifested by the corresponding complaints of the patient and, often, with a targeted survey; the patient's behavior has not changed significantly, the patient is adequate to any dental treatment manipulations, including prosthetic treatment and easily contacts a dentist
2-moderate, average level of motivation	The symptoms of the disease are constant, have a pronounced clinical character; they are manifested by "embellished", sometimes "theatrical" complaints of the patient; the patient is not concerned about the state of dental health, sometimes completely ignores his disease and does not try to build a constructive relationship with a dentist
3 – pronounced, low level of motivation	Psychoemotional disorder is the main factor determining the patient's behavior and his attitude to the doctor and dental interventions; a patient with a depressed anxious and suspicious mood, completely lacking faith in the success of treatment and the professionalism of the dentist.

Success was determined together with patients using the GRS (Global Rating of Satisfaction, Likert) scale, according to which 1 point meant that the patient was completely satisfied with the results of prosthetics and the entire treatment package, 5 points – complete dissatisfaction. The patient's own feelings and assessment served as a guideline for filling out the questionnaires: comfort in use (eating, talking, social activity, ease of care for prostheses, etc.) with partial removable prostheses, exclusion of injury to the mucous membrane (the prosthesis is smooth and polished), aesthetics of the prosthesis. One of the points of satisfaction was also the financial issue concerning the waste of training and prosthetics. An important criterion was the mode of use and care of prostheses and prosthetic beds: "daily", "from time to time", "very rarely".

To determine the intelligibility and pronunciation of speech sounds during reading, i.e. the quality of speech function, the methods of Trezubov V.N. and Chikunova S.O. (2012) were used: "low", "good" and "high" [63, 101].

2.8. Assessment of dental quality of life indicators for patients suffering from chronic recurrent stomatitis

The assessment of these indicators was carried out during the initial examination and in the dynamics of complex orthopedic treatment. We used one of the simplest, most understandable, well–known, but at the same time informative dental questionnaires for the quality and comfort of patients' lives - OHIR-14 (Table 8), adapted in Russian dental practice.

The 14 questions of the test were asked to give answers that are evaluated on a five–point scale (0 – never, 1 – sometimes, 2 – from time to time, 3 – often, most of the time, 4 - all the time) [7, 8, 29, 35, 62, 101]. The sum of the responses can be a number from 0 to 56. If the amount increases, it means that the probability increases that a person is susceptible to dental diseases. The quality of life of patients can be determined by the amount that was obtained when calculating:

from 0 to 12 – a good level of quality of life, 13-24 – satisfactory, 25-56 – an unsatisfactory level of quality of life [7, 8, 29, 101].

The periods of the control survey are marked with numbers:
1 – before treatment, 2 – after 1 month, 3 – after 3 months, 4 – after 6 months,
5 – 12 months after the start of treatment (Table 8).

Table 8 - Specialized dental questionnaire OHIR-14 (upgraded for patients with partial absence of teeth and CRAS)

Questions	The timing of the control surveys				
	1	2	3	4	5
1. Do you have pain in your mouth?					
2. Do you have difficulty eating?					
3. Do you have a lack of taste sensations due to problems in the oral cavity?					
4. Do problems in the oral cavity make your diet unsatisfactory?					
5. Do you have to interrupt meals because of problems in the oral cavity?					
6. Problems in the oral cavity make your communication with people unsatisfactory?					
7. Do you have difficulty talking?					
8. Do you have a feeling of constraint when communicating with people?					
9. Do problems in the oral cavity put you in an awkward position when communicating?					
10. Do you have increased irritability when communicating with people?					
11. Do you have difficulties in normal work due to problems in the oral cavity?					
12. "Aesthetic" problems make your life less interesting?					
13. Problems in the oral cavity prevent you from resting, relaxing?					
14. Do you experience a complete inability to take any action due to problems in the oral cavity?					

The patient's own understanding of the comfort level and quality of his life, his attitude to the existing chronic aphthous stomatitis, comparison and analysis of the survey results allowed us to evaluate the methods of complex orthopedic dental care developed and implemented by us.

2.9. Methods of statistical processing of the material

The programs "Microsoft Excel – 2010" and IBM SPSS Statistics - 22 served as a mathematical tool for processing the obtained research results.

Indicators of quantitative features are presented in the form of median (Me), minimum (Min) and maximum (Max) values, lower (Q1) and upper (Q3) quartiles.

The data were presented as an average value indicating a 95% confidence interval (95% CI).

The Pearson method was used to assess the statistical significance of frequency differences, indicating the coefficient of agreement $\chi 2$. The presentation of the correlation-regression analysis was performed indicating the Pearson correlation coefficient with an indication of its significance level R. Linear regression models were expressed using the formula(2)

$$Y=b0+b1X \qquad (2)$$

Where Y is the predicted value, X is an independent variable.

The significance level of p is indicated for each of the coefficients b0 and b1. The graphical representation of the results of correlation and regression analysis is based on a dot diagram with a regression line and lines of 95% confidence interval.

The Wilcoxon method was used to evaluate the differences in numerical values in unrelated groups, indicating the Z coefficient. Numerical values in related groups were performed using the Mann-Whitney method, indicating the Z coefficient. The graphs show the median, the average value, the first and third quartiles, the maximum and minimum values [Ungureanu, Grzybowski, 2011].

A level of statistical significance was applied, defined as $p<0.05$.

CHAPTER 3. THE RESULTS OF OUR OWN RESEARCH AND THEIR DISCUSSION

3.1. The results of clinical trials

The clinical and topographic features of CRAS were revealed mainly by the inclusion of the following areas of the oral mucosa (Figure 5): significantly more often ($p<0.001$) aphthae were observed on the lateral surface of the tongue and along the transitional fold - 86 people (67.71%), on the mucous membrane of the upper or lower lip – 28 people (22.05%), on the mucous membrane of the palate -13 people (10.24%).

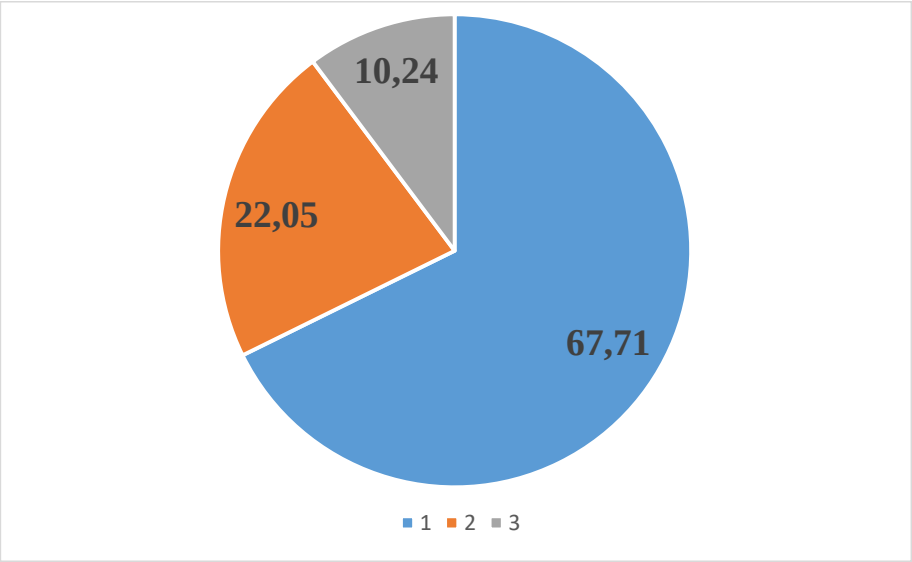

Figure 5. Clinical and topographic features of the CRAS (%) (1- transitional fold and lateral surface of the tongue; 2 -mucous membrane of the upper or lower lip; 3 - the mucous membrane of the palate)

The importance of the clinical and topographical features of the manifestation of CRAS on the oral mucosa is very important for an orthopedic surgeon when choosing a rational design of a replacement prosthesis, as it prevents the risks of possible additional injury to the mucous membrane.

In all patients with CRAS in need of orthopedic care, the dental status was characterized by the following indicators: caries intensity (CFR=14.8±2.3) – high; teeth removed ("R" – 8.3±2.2); PMA and CPITN indices, respectively 39.1±4.11 and 2.36±0.27, high); gum recession It was IR = 27.89±3.89. These indicators also confirm the need of patients for therapeutic and periodontal treatment (Figure 6).

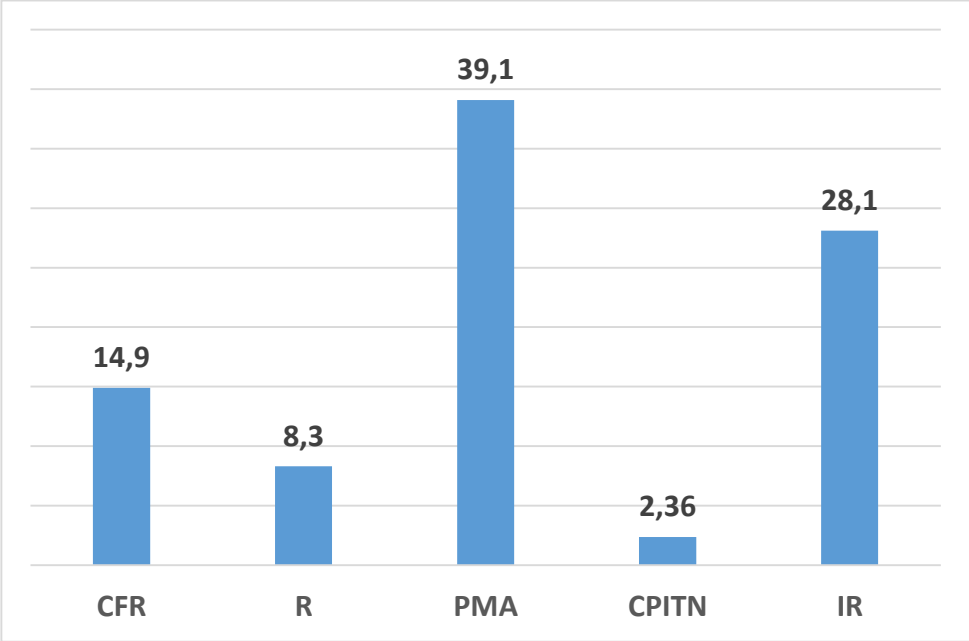

Figure 6. Indicators of the dental status of those examined

On external examination, 78 (61.42%) patients showed a decrease in the height of the lower third of the face and pronounced nasolabial folds.

Patients suffering from CRAS and in need of orthopedic care (124 out of 127 - 97.64%) complained of pain when eating (especially solid food), changes in diet during periods of exacerbation of the disease, bad breath and painful mouth opening.

Clinical examination of patients suffering from CRAS and in need of orthopedic care was conducted before prosthetics and in dynamics after partial dentures were applied: on the first day (irritation phase), the seventh day (partial inhibition period – the second phase of adaptation to the prosthesis) and the 30th day after prosthetics (full inhibition phase - the end of adaptation to the prosthesis)[123].

The clinical and anatomical conditions for prosthetics of patients with partial absence of teeth complicated by CRAS, who applied after therapeutic treatment, were studied by us before applying partial removable dentures.

Subjective (presence of complaints) and objective methods (visual examination, the Schiller-Pisarev test, the nature of morphological elements and the timing of their appearance, existence and epithelization after prosthetics with partial removable prostheses, the number of prosthesis corrections helped to assess the adaptation process.

164 (100%) partial removable dentures were made for 127 patients, of which 63 (38.42%) were for the upper jaw and 101 (61.58%) for the lower jaw.

After prosthetics, patients presented identical complaints: soreness and slight burning sensation when using the prosthesis during meals, excessive salivation, etc..

After applying prostheses and the corresponding therapy complex described above, complaints were made on the first day:

in group 1 - 42 (100%) people,

in group 2 - 41 (91.11%) people,

in group 3 - 36 (90.0%) people.

On the third day, the number of patients complaining in group 1 remained the same. It decreased slightly in the 2nd (40 people -88.89%) and 3rd groups (33 people -82.5%).

Seven days after comprehensive orthopedic treatment, we found a clear tendency to decrease subjective sensations in patients of groups 2 and 3: 17 (37.78%) patients of group 2 and 9 (22.5%) patients of group 3 had complaints.

On day 30, only 1 patient from group 2 complained of minor discomfort (2.22%), in group 3 there were no complaints.

In group 1, there was also a positive trend in the disappearance of complaints, however, compared to groups 2 and 3, it was less pronounced. Thus, on the seventh day after prosthetics with partial removable structures, 31 people (73.8%) from group 1 complained; on the 30th day, 20 (47.62%) people (Figure 7).

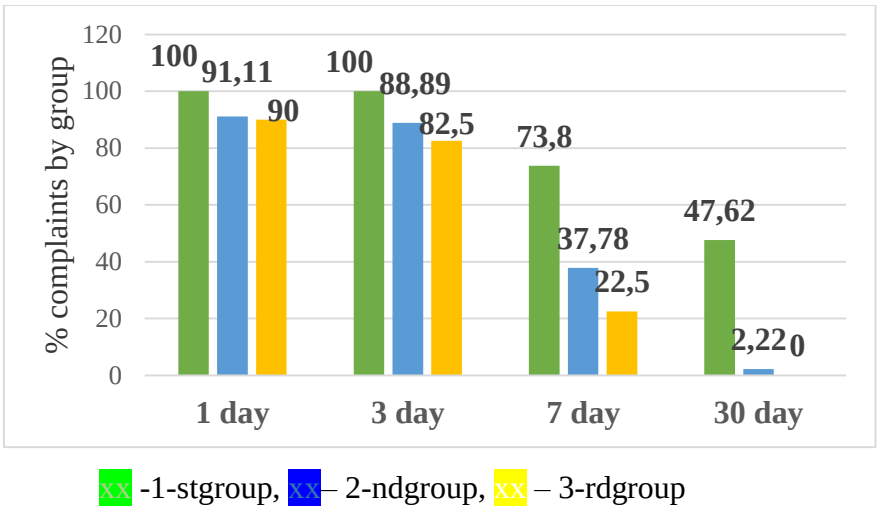

Figure 7. Dynamics of complaints in the process of adaptation to partial dentures in complex therapy

Thus, the total number of complaints during the observation periods analyzed by us (on the 1st, 3rd, 7th and 30th days after prosthetics) was: 135 in group 1, 99 in group 2, 78 in group 3. The significantly lower ($p<0.01$) number of complaints in groups 2 and 3 was confirmed statistically by calculating the Fisher angular transformation criterion (φ^*). The proposed and patented method of complex orthopedic treatment of patients with chronic recurrent aphthous stomatitis reduces the time needed to adapt to partial removable dentures made of dental material "Deflex".

We paid special attention to studying the condition of the mucous membrane of the prosthetic bed. The general characteristics of the mucous membrane of the prosthetic bed were evaluated using the classifications of Supple.

In the 1st group of the study (according to the classification of Supple) Type I of the mucous membrane was detected in 38.5% of patients, type II – in 35.4% of patients, type III – in 26.1% of patients, type IV of the mucous membrane according to Supple in the I group of patients was not detected by us (Figure 8).

In the 2nd group of the study, 40.4% of patients were type I according to the Supple classification, 43.2% were type II, 16.4% were type III (Figure 9).

In the 3rd group of the study, 49.1% of patients were type I according to the Supple classification, 31.6% were type II, 19.3% were type III, (Figure 10).

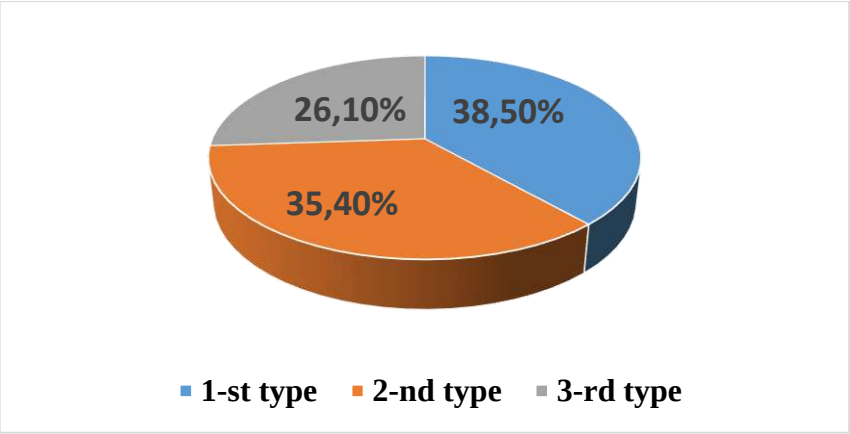

Figure 8. Types of mucous membrane of the prosthetic bed of patients 1st group according to the classification of Supple

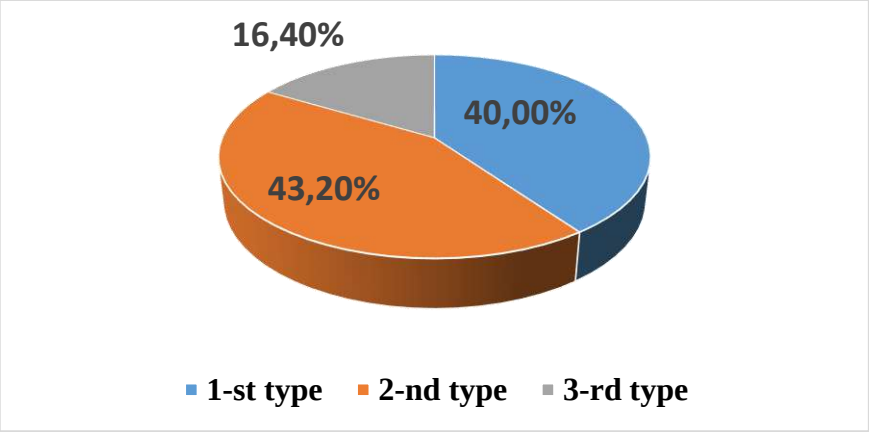

Figure 9. Types of mucous membrane of the prosthetic bed of patients 2nd group according to the classification of Supple

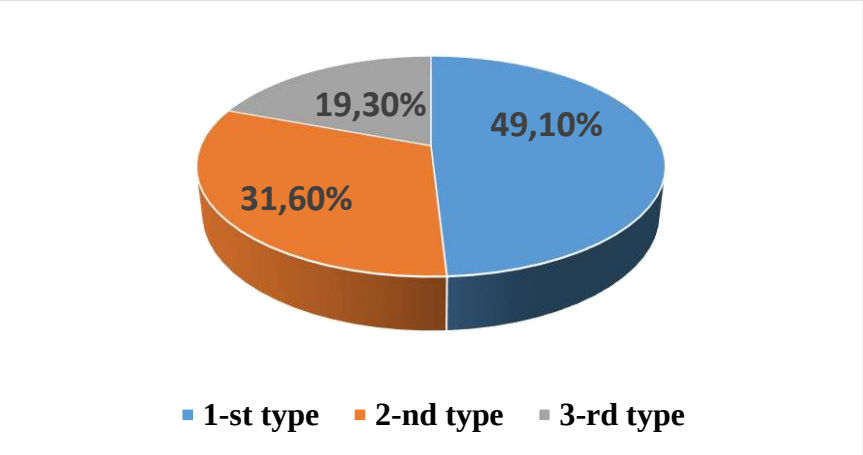

Figure 10. Types of mucous membrane of the prosthetic bed of patients The 3rd group according to the classification of Supple

Based on patient complaints and objective examination, we carried out, according to the protocols, corrections of the bases of prostheses made of "Deflex" material in all groups (Table 10).

Analyzing the timing of epithelialization and disappearance of morphological elements in patients of all groups, it can be noted that in patients of group 3, this process occurred in 37 (92.5%) a person achieved in 4.8 ± 0.2 days, in the second group in 38 (84.4%) people in 6.5±0.3 days, in the first group the process of epithelization and disappearance of morphological elements of MMM was 9.7±0.2 days in 39 (92.86%) people (Table 9).

Table 9 – Timing of epithelialization and disappearance of morphological elements in all study groups

Patient group n	The timing of epithelialization (days)	Number of patients n (%)
1-stgroup (42people)	9,7±0,2	39 (92,86%)
2-ndgroup (45 people)	6,5±0,3	38 (84,4%)
3-rdgroup(40people)	4,8±0,2	37 (92,5%)

Thus, the inclusion of the drug "Azoximer bromide" in the complex orthopedic treatment of patients suffering from CRAS and having partial absence of teeth reduces the time of epithelization of morphological elements by 2 times and can be recommended for prosthetic treatment.

According to the protocols of the Dental Association of Russia, we performed the correction of partial removable dentures in all patient groups.

Table 10 - The number of performed corrections of the bases of prostheses after complex orthopedic treatment

Patient group	The average number of corrections per 1 person	$t_{Ст}$
1-stgroup	5,5±0,47	T_{st}=3,42
2-ndgroup	3,1±0,28	T_{st}=2,52
3-rdgroup	3,0±0,11	T_{st}=2,23

The average number of corrections per 1 person turned out to be the largest in group 1: 4.5±0.47 (tSt=3.42); indicators in group 2 - (3.1±0.28; tSt=2.52, p<0.05), in group 3 (3.0±0.11; tSt=2.23, p<0.01)., which reliably confirms the effectiveness of the proposed method of complex orthopedic treatment (Table 10).

3.2. The results of the study of the initial indicators of local oral protection in patients with chronic recurrent aphthous stomatitis and partial tooth loss

Comparing the initial IgG values in the oral fluid of patients with partial tooth loss and chronic recurrent aphthous stomatitis, we noted their increase compared to the norm: the average in the groups ranged from 68.0±0.01 mg/l to 69.0±0.01 mg/l. The sIgA content was reduced compared to the norm from 181.0±0.02 mg/l to 179.0±0.05 mg/l. A compensatory increase in IgA in response to a decrease in s-IgA indicates an aggravation of the clinical picture in the oral cavity, the average values in the groups corresponded from 256.0±0.02 mg/l to 258.0±0.01 mg/l (Table 11).

Table 11 - Immunoglobulin levels in patients before treatment

Группы	IgA (mg/l)	Ig G(mg/l)	s-IgA(mg/l)
1-stgroup	256,0±0,02	69,0±0,01	181,0±0,02
2-ndgroup	257,0±0,02	68,0±0,03	179,0±0,05
3-rdgroup	258,0±0,01	68,0±0,01	180,0±0,03

We believe that the mild and moderate degrees of generalized periodontitis in patients also contributed to a decrease in the protective factors of oral fluid.

The initial indicators of phagocytic activity were also reduced. The phagocytic index (PI) is normally 40.0-80.0%. In our study, it ranged from 36.0±1.1% to 38.0±1.2%. The phagocytic number (PN) was also low from 3.7±0.1 to 3.8±0.2, with normal values from 4 to 9 (Table 12).

Table 12 - Indicators of phagocytic index and phagocytic number in patients before treatment

Groups	Phagocytic index M±m	Phagocytic number M±m
1-stgroup	36,0±1,4%	3,8±0,2
2-ndgroup	36,0±1,1%	3,7±0,1
3-rdgroup	38,0±1,2%	3,7±0,2

We also noted a decrease in lysozyme activity from 28.3±0.9% to 29.3±0.2%, with a norm of 32-40% (Figure 11).

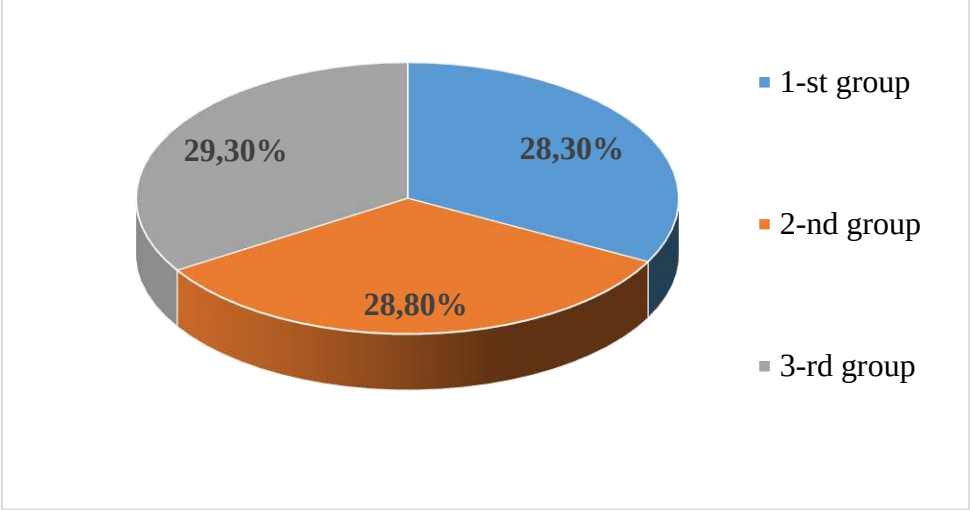

Figure 11. Lysozyme activity in patients before treatment

The stress of the state of the factors of local immunity of the oral cavity before treatment and, accordingly, a decrease in the defenses of the patient's body,

manifested in the predominance of IgG over IgA, was confirmed by a high coefficient of balance (Cb) compared with the norm: 2.39±0.1 to 2.47±0.06 (Figure 12).

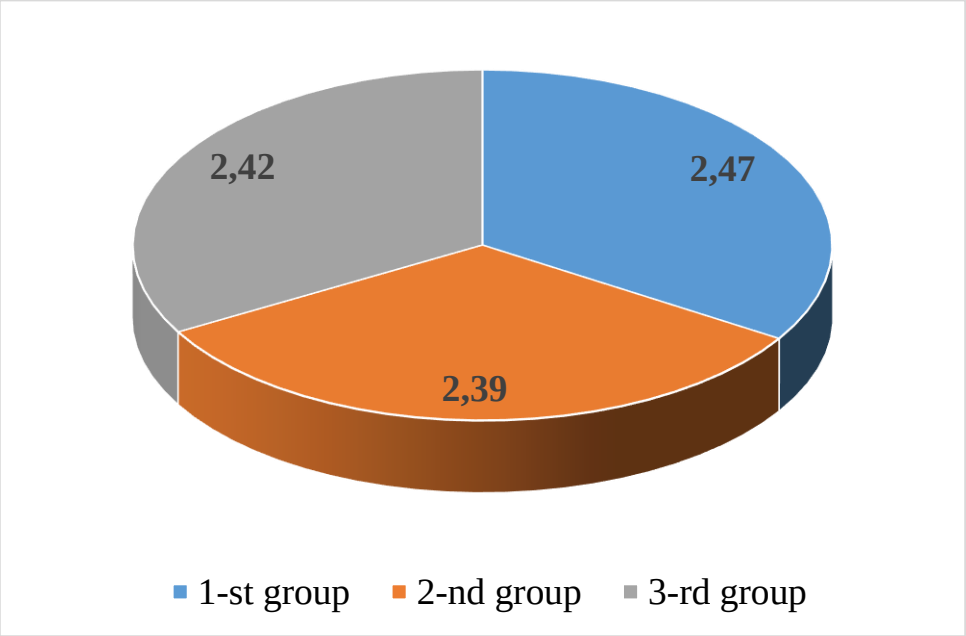

Figure 12. Cb indicators in all groups of patients before treatment

Thus, an immunological examination conducted before orthopedic treatment revealed changes in the indicators of local oral immunity in patients with partial tooth loss complicated by chronic recurrent aphthous stomatitis, which is consistent with research data from domestic and foreign authors reporting that immunoglobulins of all classes, lysozyme, leukocytes (mainly neutrophils), "they enter mainly through the dental sulcus into the oral cavity from the blood" [34, 42, 48, 75, 76, 120, 137].

3.2.1. Changes in indicators of the state of factors of local immunity of the oral cavity in patients of the first group after prosthetics with partial removable prostheses

The dynamics of the concentration of immunoglobulins after prosthetics from the "Deflex" material in the 1st group of patients was evaluated on the 10th day, after 1 month, after 2 months (Table 13).

Table 13 - Dynamics of indicators of the concentration of immunoglobulins in the oral fluid in patients of group 1 during the period of adaptation to prostheses

Immunoglobulins	Before treatment	Day 10	1 month	2 months
Ig G (mg/l)	69,0±0,01	71,0±0,01	70,0±0,02	69,0±0,01
Ig A (mg/l)	256,0±0,02	254,0±0,02	257,0±0,01	257,0±0,02
s-Ig A (mg/l)	181,0±0,02	178,0±0,01	179,0±0,01	180,0±0,01

Partial removable prosthetics was an increased antigenic burden for this group of patients. In addition, CRAS, even in remission, is a chronic inflammatory process, therefore, during the entire period of adaptation after prosthetics, the IgG level in the oral fluid had a slight tendency to increase. Table 13 shows that on the 10th and a month after prosthetics, this indicator was 71.0±0.01 mg/l and 70.0±0.02 mg/l, which is more than before treatment, but by the second month this indicator approached the initial values and became 69.0±0.01 mg/l.

10 days after prosthetics with partial removable prostheses, a significant decrease in the content of s-IgA immunoglobulins was revealed (178.0±0.01 mg/l, $p<0.05$), a slight increase in the 1st month (179.0±0.01 mg/l, $p<0.05$), and by the second month (180.0±0.01 mg/ll, $p \leq 0.05$), the indicators also approached the initial values; and a slight decrease in IgA (254.0±0.02 mg/l) on the 10th day; after a month (257.0±0.01 mg/ l) and 2 (257.0±0.02 mg/l) months compared with the data before prosthetics (table 13).

Lysozyme activity decreased on the 10th day to 26.5±0.6% (Figure 14) and a slight increase on the 1st month compared to the 10th day (27.2±0.5), and a return on the 2nd month to almost baseline values (28.1±0.6) compared with pre-treatment data.

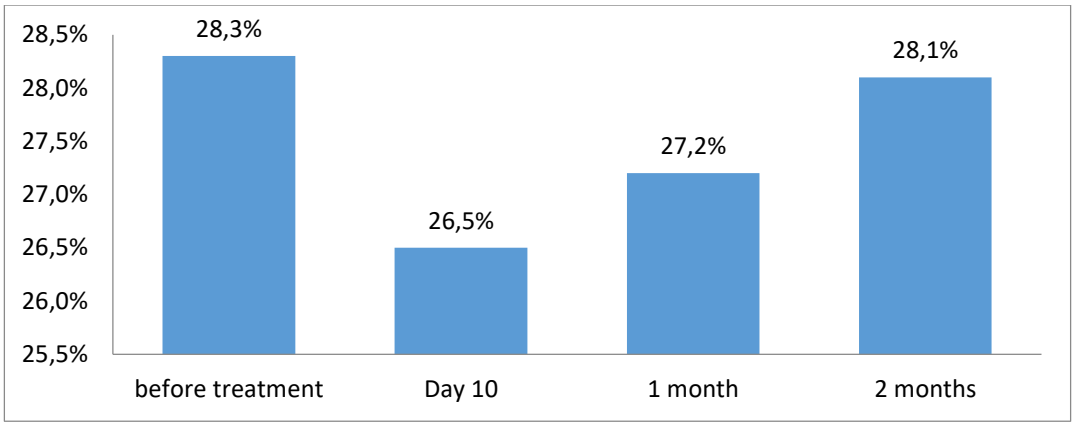

Figure 14. Dynamics of changes in lysozyme activity in saliva in patients Group 1 during the period of adaptation to prostheses

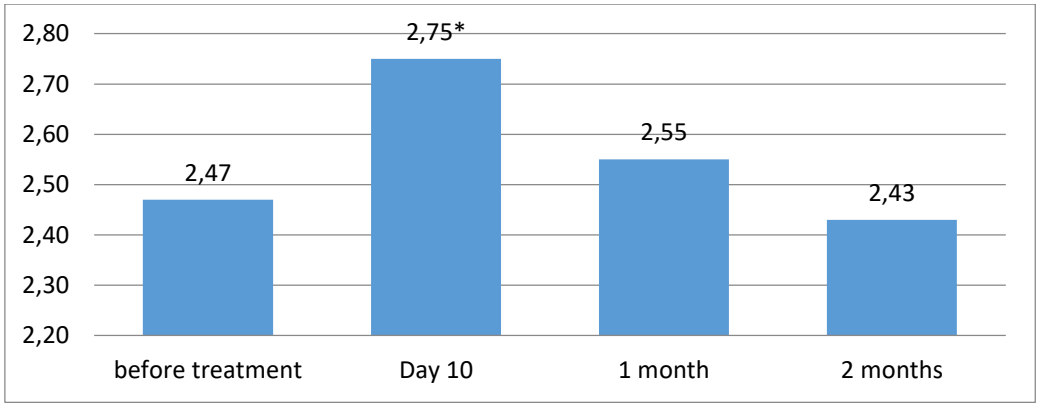

Figure 15. Dynamics of changes in the coefficient of balance of local immunity factors (Cb) in saliva in group 1 patients during the period of adaptation to prostheses.

Note: * - significant ($p<0.05$) differences from the indicator "before treatment"

Analyzing Figure 15, it should be noted that the Cb index remained elevated throughout the entire period of adaptation to partial removable prostheses: on the 10th day after prosthetics, the Cb value was 2.75±0.06, on the 1st month 2.55± 0.07, which is more than the indicator "before treatment". Thus, the results of the studies showed that in the oral fluid of patients of the 1st group, an imbalance between the factors of local immunity of the oral cavity was observed throughout the entire period of adaptation to partial removable prostheses.

Apparently, the suppression of local immunity is a consequence of the traumatic effect of the prosthesis base on the oral mucosa, despite its "relative safety".

As can be seen from Figure 15, there is a slight increase in the Cb index 1 month after prosthetics. After 2 months, all the indicators correspond to the initial values, to a certain extent this indicates the adaptation of the oral mucosa to a partial removable prosthesis.

The phagocytic activity of neutrophils also tended to decrease. The phagocytic index significantly decreased on the 10th day after prosthetics (35.0±1.7%, $p \leq 0.05$) compared with the data before treatment, and by the second month it approached the baseline values. The phagocytic number increased to 4.0±0.3 by the 10th day, then all indicators of cellular immunity returned approximately to the initial ones (Figure 16).

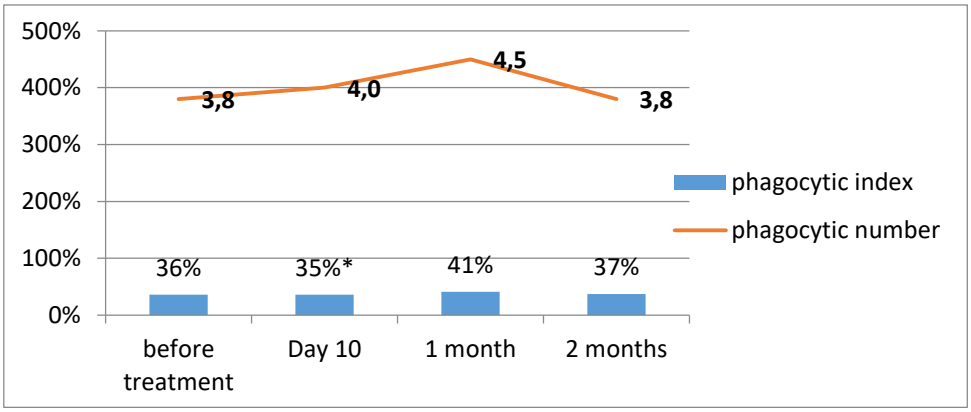

Figure 16. Dynamics of changes in phagocytosis indices in saliva in group 1 patients during the period of adaptation to prostheses.

Analyzing the results obtained, we believe that the immune system of patients of the first group at the initial stage of adaptation to partial removable prostheses demonstrates inhibition of the production of local protection factors and suppression of local immunity of the oral cavity.

3.2.2. Changes in indicators of the state of factors of local immunity of the oral cavity in patients of the second group after prosthetics with partial removable prostheses

On the 10th day of using removable structures from "Deflex" and the proposed method of drug and physiotherapy treatment in patients with chronic

recurrent aphthous stomatitis in flushes from the oral cavity, an increase in IgA levels of 0.390±0.016 mg/l and 0.393±0.013 mg/l was observed on the 10th and 1st month, respectively, compared with indicators before treatment (0.361± 0.017 mg/l). IgG, compared with the level of these indicators before prosthetics, increased on day 10 (0.438±0.019 mg/l, $p<0.05$), on the 1st month the decrease was 0.339±0.016 mg/l, $p<0.05$ compared with the indicators of the 1st group (Table 14).

The study of the level of s-IgA oral fluid in the 2nd group of patients in the process of adaptation to partial removable prostheses showed a statistically significant tendency to increase this indicator.

As follows from table 14, on the 10th day after prosthetics, the s-IgA level was 0.183±0.009 g/l ($p<0.05$), which is higher than the indicator "before treatment" in patients of group 1, and on the 1st month - 0.214±0.008 g/l, $p<0.05$, statistically significantly more than in the 1st group and "before treatment", the same trend was observed in the 2nd month - 0.234±0.010 g/l, $p<0.05$.

Table 14 - Dynamics of changes in the concentration of immunoglobulins in oral fluid in group 2 patients during the period of adaptation to prostheses

Immunoglobulins	Before treatment	Day 10	1 month	2 months
Ig G (mg/l)	68,0±0,01	69,0±0,01	70,0±0,02	69,0±0,02
Ig A (mg/l)	257,0±0,02	258,0±0,02	259,0±0,01	259,0±0,02
s-Ig A (mg/l)	179,0±0,02	180,0±0,01	181,0±0,02	180,0±0,01

Lysozyme activity also increased slightly (29.2±0.7%) on the 10th day compared with the indicator before treatment (Figure 17), then there was no significant increase in activity (29.9±0.4%), but by the end of the second month this indicator becomes 31.1±0.4%, approaching the maximum values of the norm.

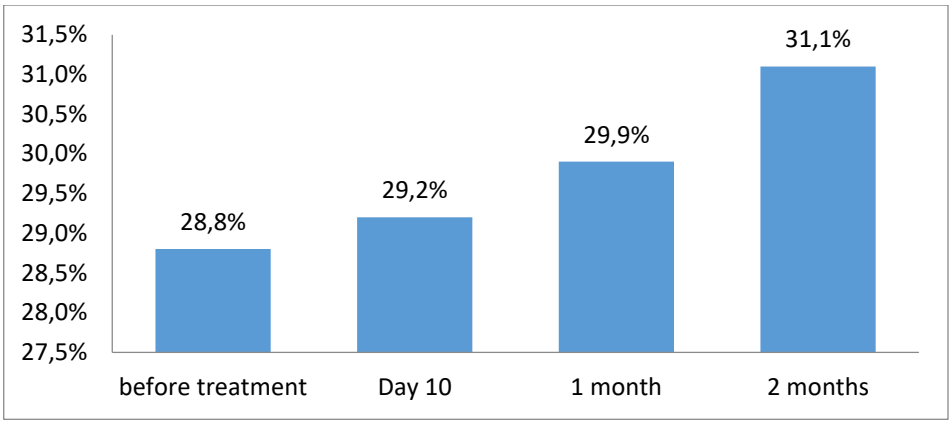

Figure 17. Dynamics of changes in lysozyme activity in saliva in group 2 patients during the period of adaptation to prostheses

The Cb index remained slightly elevated throughout the entire period of adaptation to partial removable prostheses (Figure 18).

As can be seen from Figure 18, the value of Cb on the 10th day after prosthetics was 2.28±0.06 ($p<0.05$), on the 1st month it was -2.18±0.08 ($p<0.05$), which is less than the indicators "before treatment", and the second month showed a value of 2.38±0.05.

Thus According to the research results, a slight imbalance between the factors of local immunity of the oral cavity was observed in the oral fluid of patients of the 2-nd group throughout the entire period of adaptation to partial removable prostheses.

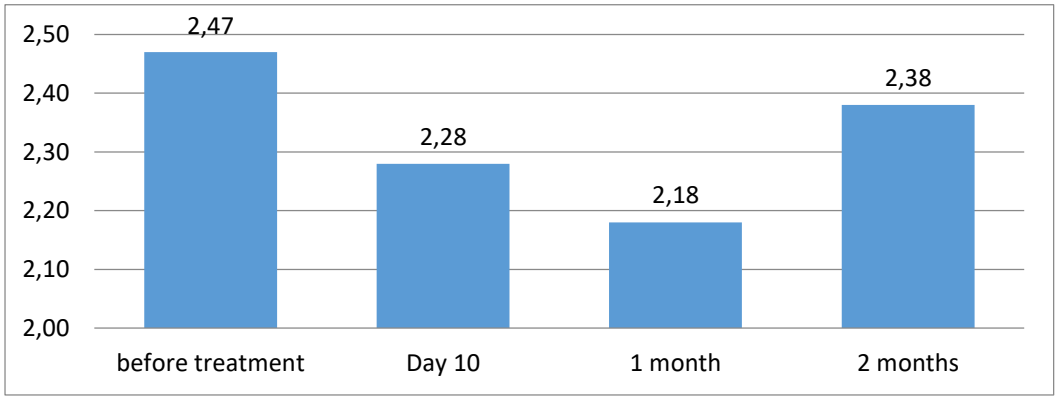

Figure 18. Dynamics of changes in the coefficient of balance of local immunity factors (Cb) in the oral fluid of group 2 patients during the period of adaptation to prostheses

The phagocytic index tended to increase by 1 month to 46.0±0.3%, p<0.05 compared with the indicators of the 1st group, the phagocytic number significantly increased by day 10 to 5.0±0.3 (P<0.05), compared with "before treatment", by 1 month to 6.0±0.3 (P<0.05) and decreased again 5.0±0.3(P<0.05) for 2 months, which is higher than the indicators "before treatment" and in the 1st group (Figure 19).

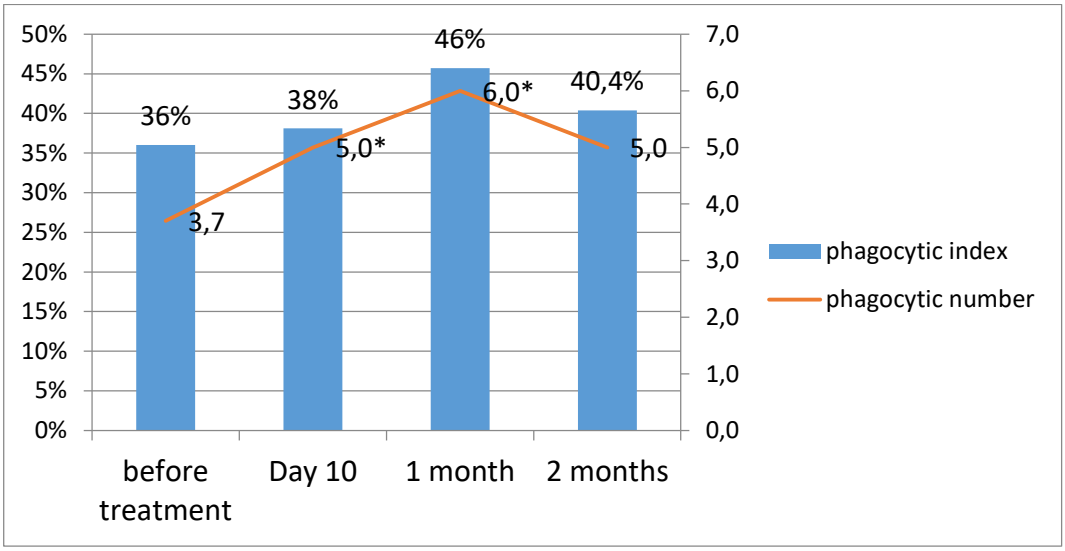

Figure 19. Dynamics of changes in phagocytosis indices in saliva in group 2 patients during the period of adaptation to prostheses

Notation: * - significant (P<0.05) differences from the indicator "before treatment"

Thus, after the application of partial removable prostheses, normalization of the main indicators of local immunity in the oral cavity was noted in patients of this group, but insignificant: the initially reduced level of immunoglobulins, lysozyme, and phagocytic index increased. In addition, all patients of the 2nd group noted an improvement in general well-being, changes in the clinical picture of CRAS: pain, discomfort in the oral cavity decreased, no patient had a recurrence of the disease for 2 months, and faith in further treatment appeared.

In our opinion, such changes are associated not only with the competent choice of dental material "Deflex", but also with the course of medication and physiotherapy, which has analgesic, decongestant, epithelizing effects.

3.2.3. Changes in indicators of the state of factors of local immunity of the oral cavity in patients of the third group after prosthetics with partial removable prostheses

Patients of the 3rd group using prostheses from "Deflex", in addition to medication and physiotherapy, received the drug "Azoximer bromide", which was taken by patients sublingually 1 tablet twice a day. The state of local immunity factors in this group of patients was also studied on the 10th day, 1 month and 2 months after the complex treatment. So, on the 10th day, lysozyme levels returned to normal and there was an increase in s-Ig, IgA and IgG levels. A month later, we recorded the constancy of the phagocytic number and phagocytic index. Thus, the use of prosthetic treatment in the partial absence of teeth using the material "Deflex", a complex of medical treatment, including the drug "Azoximer bromide", applications to the elements of the lesion of the oral mucosa "Diplen Denta LH" 2 times a day for 7 days; Vinilin balm 2 times a day for 5 days, for 20 minutes and physiotherapy with unpolarized pulsed red light "Svetozar" for 1 minute for each element of the lesion of the oral mucosa for 5 days, led to an increase in the quantitative content of s-IgA, compared with the indicators before treatment, normalization of the quantitative content of IgA, IgG in mixed saliva, lysozyme levels and functional activity of neutrophils compared with the indicators before treatment. The prolonged effect of this therapy was maintained for the 2nd month (Table 15).

Evaluation of the indicators on day 10 revealed a statistically significant trend towards an increase in the IgG content in mixed saliva, which amounted to 72±0.02 mg/l ($p<0.05$). This is a statistically large value compared to the indicator "before treatment" and the indicators of patients from group 1.

In the first month after prosthetics, the IgG level in the oral fluid tended to increase significantly and amounted to 81.0±0.02 mg/l ($p<0.05$), in the second month IgG was 86.0±0.01 mg/l ($p<0.05$), which is statistically significantly higher compared with the indicators "before treatment" and with similar indicators in the 1st group. This indicator was almost equal to the normal value (Table 15).

We have noted a stable positive dynamics of sIgA indicators throughout the entire period of adaptation to partial removable prostheses. As follows from Table 16, this indicator increased already on the 10th day after prosthetics to 284.0±0.01 mg/l.

The IgA level also had a characteristic tendency to increase throughout the entire period of adaptation: its content in oral fluid was 416.0±0.01 mg/l ($p<0.05$) at the 1st month, which was significantly higher than in groups 1 and 2; a statistically significant increase at the 2nd month - 418.0±0.02 mg/l ($p<0.05$) (Table 15).

Table 15 - Dynamics of changes in the concentration of saliva immunoglobulins in group 3 patients during the period of adaptation to prostheses

Immunoglobulins	Before treatment	Day 10	1 month	2 months
Ig G (mg/l)	68,0±0,01	72,0±0,02	81,0±0,02	86,0±0,01
Ig A (mg/l)	258,0±0,02	314,0±0,02	416,0±0,01	418,0±0,02
s-Ig A (mg/l)	180,0±0,02	284,0±0,01	471,0±0,02	469,0±0,01

Thus, against the background of an increase in IgG levels "before treatment", we registered an increase in the level of s-IgA and IgA in the oral fluid by the 1st month after prosthetics were applied.

An increase in the level of s-IgA, IgG and IgA indicates the normalization of the specific reactivity of the oral cavity and confirms the ability of the drug Azoximer bromide to significantly increase the protective properties of the oral fluid. Against the background of the use of the drug "Azoximer bromide", the antigen representing the function of the humoral link of immunity is restored and the specific immunity of the oral cavity is activated, and an increase in the level of IgG of oral fluid in patients of group 3 clearly confirms the anti-inflammatory and immunostimulating effect of the drug "Azoximer bromide". The prolonged effect of this drug lasted up to 2.5 months.

There was a significant statistically significant increase in lysozyme activity as early as 1 month of observation to 40.2±0.5%, in contrast to the indicator "before treatment", this trend continued for the 2nd month (48.5±0.4%, p<0.05), a significant increase (p<0.05) compared with the 1st and 2nd group (Figure 20).

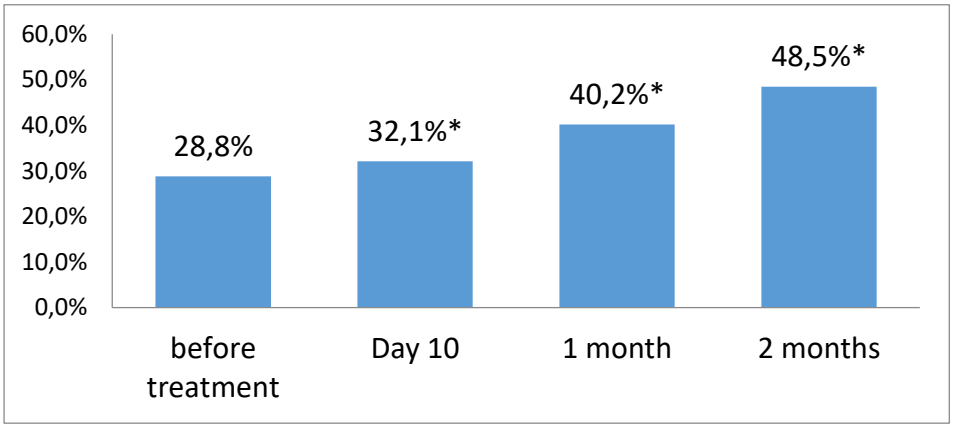

Figure 20. Dynamics of changes in lysozyme activity in saliva in patients of group 3 during the period of adaptation to prostheses.

Notation: * - significant (p<0.05) differences from the indicator "before treatment"

The positive dynamics of Cb (coefficient of balance) of local oral immunity factors in this group of patients was observed as early as 10 days after prosthetics. If initially the value of this indicator was increased, then after 10 days it decreased and amounted to 2.09 ±0.06 (p<0.05), a statistically significant difference from the indicator "before treatment" and group 1. At the 1st month after prosthetics, Cb came close to the norm of 1.32±0.04 (p <0.05), at the 2nd month 1.35±0.03 (p<0.05) (Figure 21).

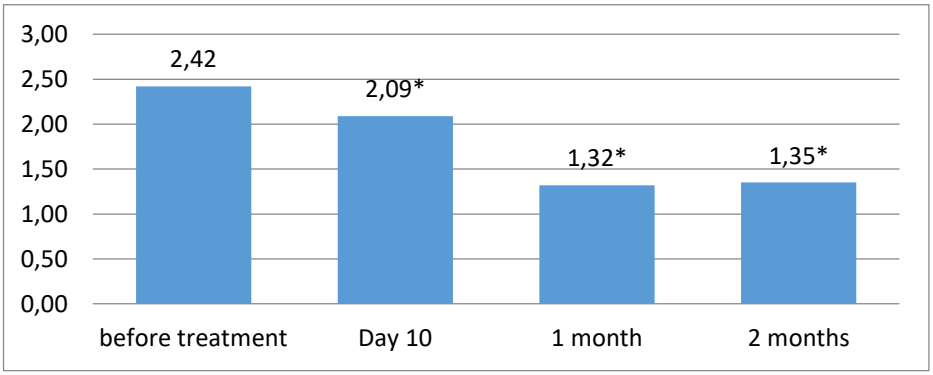

Figure 21. Dynamics of changes in the coefficient of balance of local immunity factors (Cb) in the oral fluid of patients of group 3 during the period of adaptation to prostheses

Notation: * - significant (p<0.05) differences from the indicator "before treatment"

Phagocytic activity also increased throughout the adaptation of patients to prostheses and on the 10th day amounted to 51.0±1.9% ($p<0.05$), in contrast to the indicator before treatment; at the time of the 1st month, the indicator was 69.0±1.8% and in the 2nd month - 63.0±1.5% ($p<0.05$), which is significantly higher than "before treatment" and compared with the indicators of the 1st and 2nd groups (Figure 24). The phagocytic number increased by day 10 to 5.0±0.2 ($p<0.05$), by month 1 to 8.0±0.2 ($P<0.05$) and by month 2 to 7.0±0.3($p<0.05$) compared with groups 1 and 2. (Figure 22).

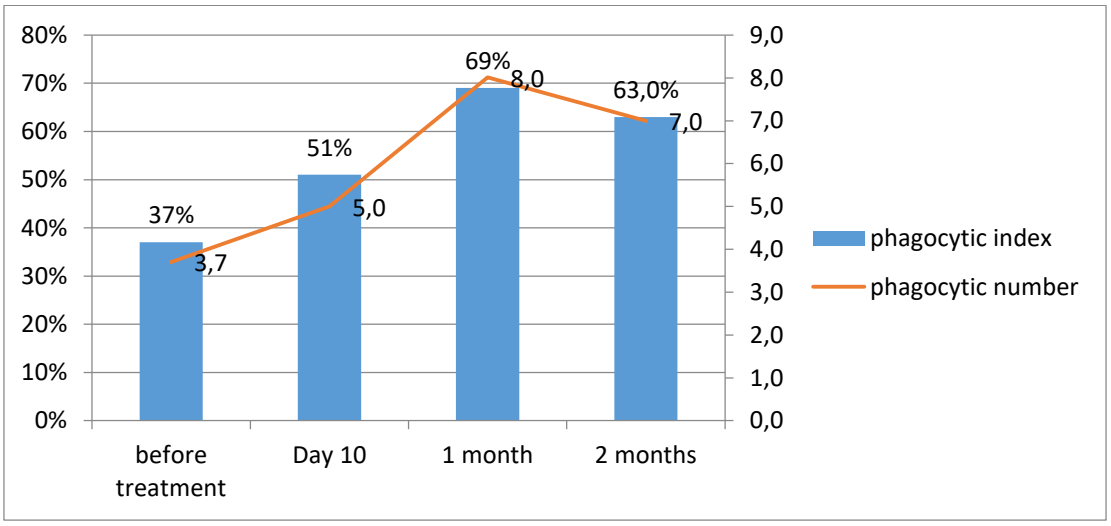

Figure 22. Dynamics of changes in phagocytosis indices in saliva in group 3 patients during the period of adaptation to prostheses

Thus, the inclusion of Azoximer bromide in the complex of rehabilitation measures in patients of group 3 contributed not only to the elimination of an imbalance of factors of specific local immunity of the oral cavity, but also to an increase in the protective characteristics of oral fluid, manifested by an increase in the content of s–Ig and a decrease in IgA, IgG, normalization of lysozyme levels and an increase in the functional activity of neutrophils.

The analysis of the results suggests that the developed set of measures using the drug "Azoximer bromide" in patients of the third group contributes to the positive correction of local immunity in the oral cavity.

It should be noted that this positive effect also affects the general condition of patients, expressed in the disappearance of discomfort when communicating with other people, a decrease in the number of morphological elements, swelling and hyperemia of the mucous membrane of the prosthetic bed, as well as a decrease in the number of recurrence of CRAS.

Comparing the changes in indicators in all three groups, it can be noted that in patients of groups 1 and 2, the content of s-IgA, IgA and IgG in mixed saliva during the entire period of observation, after a slight increase on day 10, subsequently returned to the baseline level. On the contrary, in the 3rd group, the indicators of s-IgA, IgG and IgA changed significantly, approaching the indicators of the norm, in comparison with the indicators of the 1st and 2nd groups.

Normalization of local immunity of the oral cavity, when the Azoximer bromide drug was included in complex treatment in the 3rd group of examined patients, was evidenced by a significant ($p<0.05$) decrease in the coefficient of balance of local immunity factors (Cb), while in patients of the 1st group the value of this indicator (>2) indicated his unfavorable condition (Figure 23).

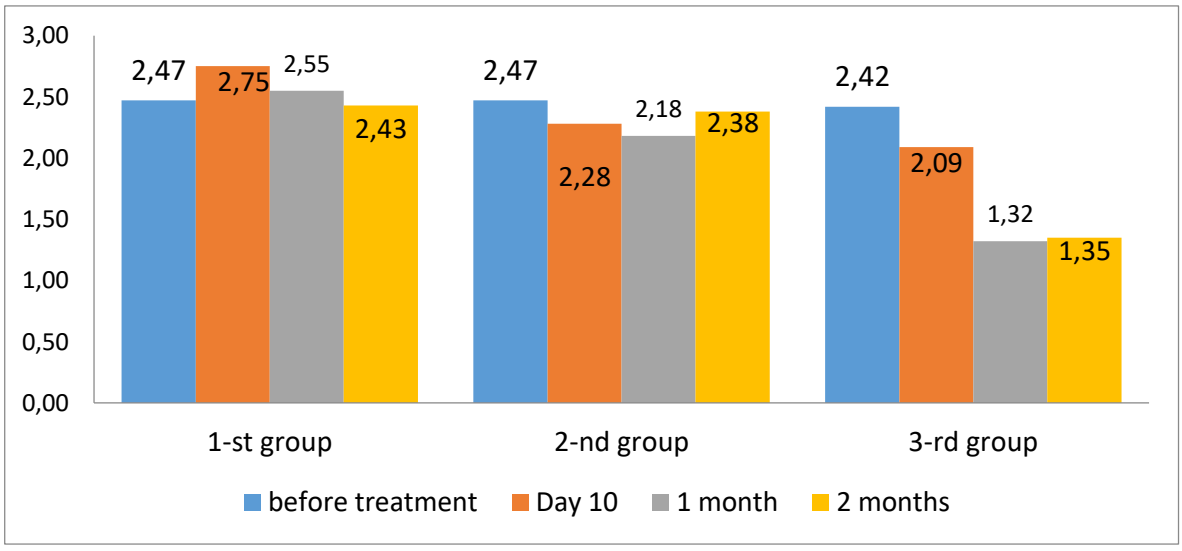

Figure 23. The average values of the coefficient of balance of local immunity factors (Cb) in the oral fluid of patients of all groups during the entire observation period

The increase in the phagocytic number and phagocytic index, which significantly exceeded similar indicators of patients in the 2nd and, especially, in the 1st group throughout the entire observation, indicated a decrease in the intensity of local humoral immunity and activation of cellular immunity in patients of the 3rd group, in whose treatment complex the drug Azoximer bromide was included (Figure 24, Figure 25).

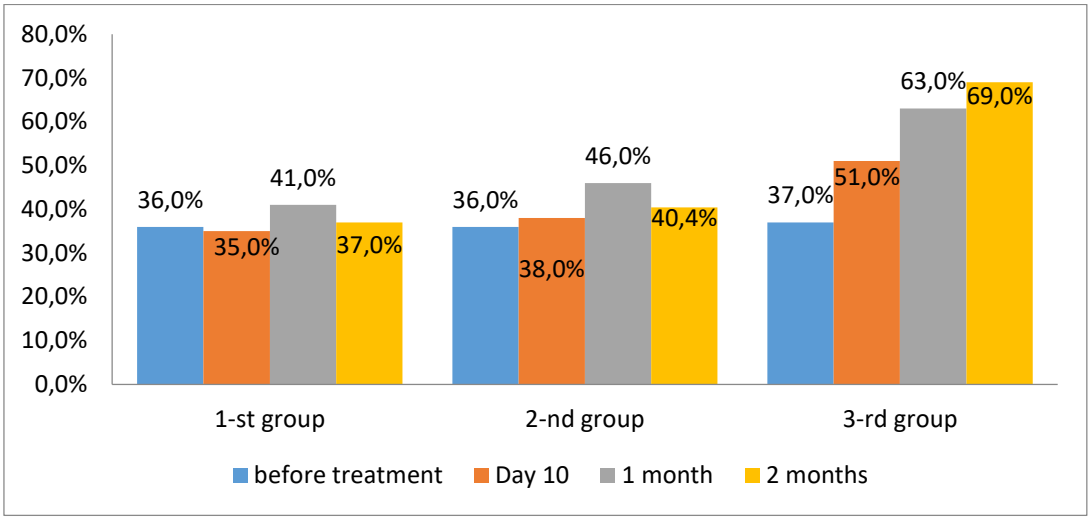

Figure 24. The average phagocytic index in the saliva of patients of all groups before and after treatment

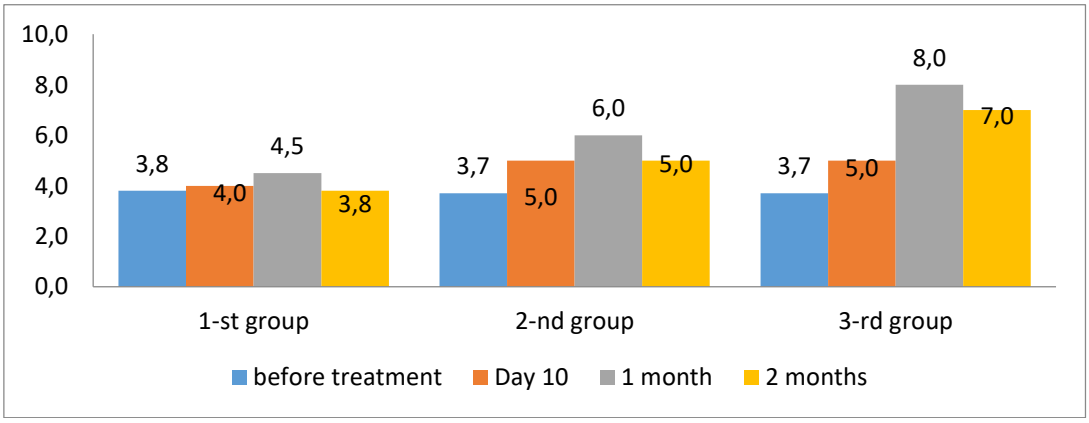

Figure 25. The average phagocytic number in the mixed saliva of patients of all groups before and after treatment

A comparative statistical analysis of the results of the study of local immunity showed significant differences in changes in indicators during the period of adaptation of patients to partial removable prostheses (Table 16).

Table 16 - Summary table of the dynamics of oral fluid immune parameters in all three groups (M±m)

Indicators	Groups	Study periods			
		Before treatment	Day 10	1-st month	2-nd month
s-Ig A(mg/l)	1-stgr.	181,0±0,02	178,0±0,01	179,0±0,01	180,0±0,01
	2-ndgr.	179,0±0,05	180,0±0,01	181,0±0,02	180,0±0,01
	3-rdgr.	180,0±0,03	284,0±0,01	471,0±0,02*	469,0±0,01*
IgA(mg/l)	1-stgr.	256,0±0,02	254,0±0,02	257,0±0,01	257,0±0,01
	2-ndgr.	257,0±0,02	258,0±0,02	259,0±0,01	259,0±0,02
	3-rdgr.	258,0±0,01	314,0±0,02	416,0±0,01*	418,0±0,02*
IgG(mg/l)	1-stgr.	69,0±0,01	71,0±0,01	70,0±0,02	69,0±0,01
	2-ndgr.	68,0±0,03	69,0±0,01	70,0±0,02	69,0±0,02
	3-rdgr.	68,0±0,01	72,0±0,02*	81,0±0,02*	86,0±0,01*
Lysozyme activity (%)	1-stgr.	28,3±0,9	26,5±0,6	27,2±0,5	28,1±0,6
	2-ndgr.	28,8±0,6	29,2±0,7	29,9±0,5	31,1±0,2
	3-rdgr.	29,1±0,2	32,1±0,3	40,2±0,5*	48,5±0,4*
Phagocytic index	1-stgr.	36,0±1,4	35,0±1,7*	41,0±1,2	3,7,0±1,3
	2-ndgr.	36,0±1,1	38,0±1,2	46,0±0,3	40,4±1,0
	3-rdgr.	38,0±1,2	51,0±1,9*	69,0±1,8*	63,0±1,5*
Phagocytic number (%)	1-stgr.	3,8±0,2	4,0±0,2	4,5±0,3	3,8±0,3
	2-ndgr.	3,7±0,1	5,0±0,3*	6,0±0,2*	5,0±0,1*
	3-rdgr.	3,7±0,2	5,0±0,2*	8,0±0,2*	7,0±0,3*
Cb	1-stgr.	2,47±0,06	2,75±0,06*	2,55±0,07	2,43±0,07
	2-ndgr.	2,39±0,1	2,28±0,06	2,18±0,08	2,38±0,05
	3-rdgr.	2,42±0,04	2,09±0,05*#	1,32±0,04*	1,35±0,02*

Notation: * - significant ($p \leq 0.05$) differences from the indicators of the 1-st group.

As follows from table 16, in patients of group 1, an increase in the imbalance between the factors of local immunity of the oral cavity was observed throughout the entire period of adaptation to partial removable prostheses, at the same time as in patients of group 2, who, with prosthetics made of dental material "Deflex" and complex drug and physiotherapy, and The 3rd group, which combined the use of dentures made of dental material "Deflex" and a complex of medications, including the drug "Azoximer bromide", and physiotherapy, significantly increased the protective properties of oral fluid, what helped to eliminate the imbalance between the factors of immunological resistance of the oral cavity.

3.3. The results of bacteriological studies

When assessing the quantitative and qualitative contamination of the mucous membrane of the prosthetic bed ((total microbial number (TMN) in conventional units)), it was found that in patients of all three groups, microbial associations are represented in greater numbers by coccal flora: St. aureus, Candida albicans, Neisseria, Klebsiella, Str.piogenes, Str. Pneumonia, Str.epidermidis. Due to the weakening of the immune protection of the oral mucosa, the number of microbial associations, in particular, anaerobes, increases. Enterococcus faecalis and fungi of the genus Candida appear, which indicates dysbiosis of the oral cavity.

Analyzing the results of the bacterial species in the material taken from the mucous membrane of the prosthetic bed in group 1 patients, it was found that after 10 days of observation, an increase in the growth of pathogenic and opportunistic flora was recorded in this group of patients, which was observed after 1 month of the study (Table 17)

In the 2nd group, a significant decrease in pathogenic microflora was observed on the 10th day of the study, by the 30th day the number of colonies decreased by 10-20 times, or were not sown at all.

Table 17 shows that in patients of the 3rd group using the drug Azoximer bromide in a complex of orthopedic and drug treatment, on the 10th day of the study, the number of colonies of pathogenic flora significantly decreased or did not sow at all. On the 30th day, the pathogenic flora in the 3rd group of patients was not actually sown.

Table 17 - Dynamics of indicators of contamination of the prosthetic bed during treatment (TMN, in units) (M±m)

The microorganism	Patient group	The duration of the study		
		Before treatment	10 days	30 days
St. aureus	1-stgroup	42,8±0,7	57,4±0,7*	47,9±1,3*
	2-ndgroup	38,0±1,3	17,5±1,4#	7,5±1,0#
	3-rdgroup	42,8±1,6	28,5±1,7*#	2,5±0,4*#
Neisseria	1-stgroup	14,3±0,2	14,2±0,2	12,8±0,7
	2-ndgroup	9,5±0,7	3,8±0,2*#	1,8±0,2*#
	3-rdgroup	9,5±0,7	0*#	0*#

Continuation of the table 17

Klebsiella	1-stgroup	4,8±0,1	4,8±0,1	1,4±0,1*
	2-ndgroup	4,8±0,2	2,1±0,3	0*
	3-rdgroup	4,8±0,2	0*#	0*
Str.piogenes	1-stgroup	14,2±0,2	15,2±0,2	14,1±0,2
	2-ndgroup	9,5±0,6#	5,7±0,5#	1,8±0,5*#
	3-rdgroup	9,5±0,8#	4,7±0,4*#	0*#
Str.pneumonia	1-stgroup	4,8±1,0	4,8±0,1	2,2±0,1
	2-ndgroup	4,8±0,2	1,8±0,2	0,8±0,2
	3-rdgroup	4,7±0,3	0*#	0*#
Ent. faecalis	1-stgroup	18,4±0,2	19,4±0,2	17,3±0,2
	2-ndgroup	18,0±0,7	14,2±0,4*#	3,5±0,6*
	3-rdgroup	18,4±0,5	0*#	0*#
Candida albicans	1-stgroup	34,4±0,2	47,6±1,0*	47,6±0,9*
	2-ndgroup	33,3±1,9	8,5±1,5#	3,3±1,9#
	3-rdgroup	34,1±2,4	0*#	0*#

Note: * - significant (p≤0.05) differences from the indicators "before the start of treatment"; # - significant (p≤0.05) differences from the indicators of the 1st group

Thus, the use of the proposed method of treatment, including prosthetics with partial removable structures for patients with chronic recurrent aphthous stomatitis and complex drug and physiotherapy, increases anti-infective resistance in the oral cavity and allows normalizing the imbalance between normal flora and the immune response of the body, expressed in suppressing the growth of pathogenic flora.

3.4. The results of the assessment of the quality of life using the adapted OHIP-14 dental questionnaire

The quality of life and comfort of patients before treatment and during treatment was assessed by the well-known and informative OHIP-14 questionnaire adapted to Russian dental practice (see Chapter 2).

A five–point scale (0 – never, 1 – sometimes, 2 – from time to time, 3 – often, most of the time, 4 - all the time) helps to evaluate the answers to the 14 questions of the test. The probability of a person's exposure to dental diseases increases with an increase in the number of points. The level of comfort and quality of life of patients is interpreted by the total score (0-12 – "good", 13-24 –

"satisfactory", 25-56 – "unsatisfactory"). At the same time, control surveys are conducted:

1 – before treatment,

2 – after 1 month,

3 – after 3 months,

4 – after 6 months,

5 – 12 months after the start of treatment.

This study made it possible to establish the objective attitude of a patient with CRAS to his disease, the level of motivation and to solve the issues of time parameters of clinical stages and the appropriate scheme of drug treatment.

In the course of the study, we formulated the provisions according to which, in the complex orthopedic treatment of patients with CRAS and partial secondary adentia, it is necessary:

1. When using complex orthopedic treatment of patients with CRAS and partial secondary adentia, to increase the indicators of comfort and quality of life, including those that determine aesthetics, eating and speech.

2. To provide rational comprehensive orthopedic dental treatment based on the individual psycho-emotional problems of the patient.

3. The correction of prostheses should be carried out taking into account the peculiarities of the psychological type of each patient.

As reported in literary sources [7, 8, 29, 43, 62, 101], to assess the effectiveness of prosthetic treatment, it is necessary to include, in addition to a variety of clinical indicators, the parameters of comfort and quality of life of patients.

As is known from literary sources, there are several types of nervous system [33, 101, 104]. Sanguine people are patients with a relatively balanced psyche, phlegmatic people need deeper and longer, thorough preparation for prosthetic treatment, choleric people are patients with a quickly and easily excitable nervous system, which makes it vulnerable in matters of restoring psychological resources

[33, 101, 104]. Therefore, in order to carry out comprehensive orthopedic treatment of this type of patient, the dentist must be seasoned and use concise and correct terms at each appointment. Melancholics are a weak type of nervous system. Such patients present the greatest difficulties in psychological preparation and prosthetic treatment. In addition to psychological training, which consists in preparatory conversations, such patients need to undergo drug therapy during the entire course of treatment. Only with such a scheme of complex orthopedic treatment of patients with partial absence of teeth and CRAS, it is possible to obtain favorable results. Maximum success in prosthetics can be achieved only with mutual understanding between the doctor and the patient.

Domestic dentists have proposed a clinical dental scale [7, 8, 29, 43, 62, 101]. It is used to assess the psychoemotional and physiological status of patients [101]. In our study, we also used this scale, where we evaluated five basic psychoemotional responses at the time of the patient's questionnaire: A – asthenic, D – depressive, Anx – anxious, Hp – hypochondriac, Hs – hysterical [7, 8, 29, 43, 62, 101]. The severity of these reactions was taken into account and then converted into appropriate scores.

During the survey and anamnesis collection, we paid attention to the appearance, adequacy and peculiarities of the patient's behavior in the dental chair. The motivation for the proposed prosthetic and, if necessary, drug treatment was analyzed. They paid attention to the nature of the answers to the questions posed to the patient, while noting the degree of severity or moderation of each psychoemotional reaction [15]. Then, combining the indicators and criteria, we obtained a graph of the level of the patient's psychophysiological condition, depending on his psychological type at the time of the visit (Figure 26).

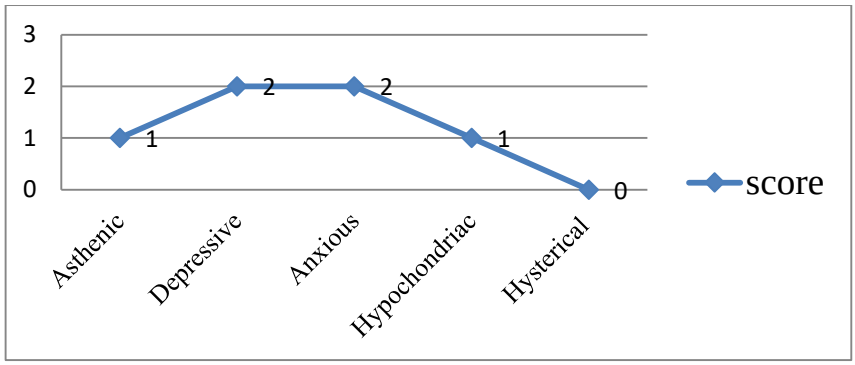

Figure 26. An example of a graph of the levelof a patient's psychophysiological condition

We found it necessary to conduct a survey and testing of patients at the following stages of comprehensive orthopedic treatment:

Stage 1 – one day before the start of the procedure (when contacting the clinic);

Stage 2 – 1 month after the course of complex treatment;

Stage 3 – 3 months after the course of complex treatment;

Stage 4 – 6 months after the course of treatment.

The application of criteria for assessing the level of comfort and quality of life of patients was especially necessary, as it allowed to establish a comprehensive attitude of the subject to the disease present in him and to select the most appropriate prosthetics schemes, taking into account the patient's own understanding of the level of comfort and quality of his life.

At each visit, using the OHIP-14 questionnaire, the parameters of the patient's comfort level and quality of life were evaluated in the same way. The dental questionnaire was divided into four categories of questions: problems arising during meals; difficulties accompanying communication; difficulties at work and on vacation.

At the beginning of the study, for a thorough and objective assessment of the quality of life and the level of comfort, the level of motivation, depending on the chosen method of orthopedic dental care, all patients were divided into three groups specified in Chapter 2.

Table 18 - Changes in the level of motivation for complex orthopedic treatment of patients with CRAS

Group	Before treatment	During the treatment process
1-stgroup	2,78±0,01	1,54±0,02
2-ndgroup	2,72±0,02	0,31±0,01
3-rdgroup	2,75±0,01	0,49±0,03

As follows from Table 18, in the process of complex orthopedic treatment, the level of motivation for treatment in patients with CRAS also changed: from a low level (respectively, 3 points), lack of faith in the success of treatment in all clinical groups, the level increased to a high 1-0 points).

3.4.1. The dependence of the level of comfort and quality of life on the sex of the subjects

At the first appointment, before the start of orthopedic dental treatment, each patient was asked to fill out an OHIP-14 dental questionnaire in order to analyze his comfort level and quality of life [7, 8, 29, 43, 62, 101, 108].

The data obtained from the survey of patients showed that their level of comfort and quality of life is directly related to clinical and emotional-psychological factors in CRAS and partial secondary adentia, as well as gender and social status play an important role.

A comparative analysis of the materials obtained as a result of patients filling out the OHIP-14 dental questionnaire before the start of orthopedic dental treatment clearly showed a different gender-based attitude towards the existing disease and partial secondary adentia.

Before starting comprehensive orthopedic dental treatment, women more often than men pointed out that CRAS and partial secondary adentia cause significant inconvenience during the meal, do not allow them to fully work and relax, communicate with colleagues, relatives and their family members. In addition, CRAS and partial secondary adentia put female patients in an awkward,

shy position, thereby increasing irritability in the process of communication, further worsening relationships with others and well-being. The increased emotionality of female representatives, compared with men, is the reason for more frequent difficulties in daily work, which was noted by women when filling out the OHIP-14 questionnaire.

A comparative assessment of the number of points and differences between the obtained data of men and women in three groups have been analyzed and are statistically insignificant (Figure 27).

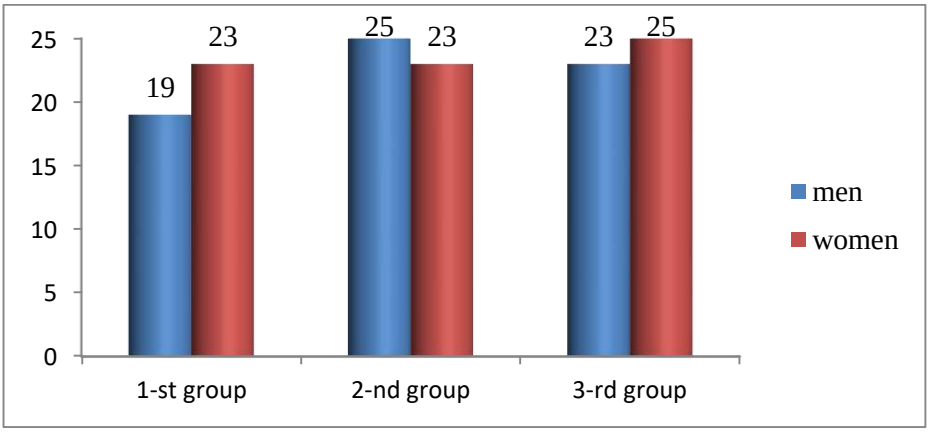

Figure 27. Comparative assessment of the number of points on the level and quality of life in groups of patients before treatment

Further investigation of the survey results showed that one, three, six months after the start of comprehensive orthopedic dental treatment, the level of comfort and quality of life for both women and men increased significantly in all the groups of patients we identified.

Also, the level of communication with colleagues, friends and family members has changed positively: self-confidence and further treatment have appeared, which, in turn, not only "allowed", but even "initiated" increased contacts with people around them. The progress achieved after orthopedic dental treatment led to a decrease in difficulties in daily work, and after 1 month after the end of treatment, the level of comfort and quality of life of patients of all groups due to daily work increased by 2 times (from 0 to 1 point).

An analysis of the data obtained when filling out the OHIP-14 dental questionnaire by men and women indicates a pronounced tendency to increase the level of comfort and quality of life from "poor" and "satisfactory" to "good".

3.4.2. The dependence of complex orthopedic dental treatment on the level of comfort and quality of life of patients

These differences were significantly pronounced 1 and 3 months after the start of orthopedic dental treatment. After the treatment, the patients indicated a significant improvement in their general condition. There was also not only an increased motivation for orthopedic treatment, but also psychoemotional changes in a positive way.:

• Emotionally positive reactions prevailed,

• Increased irritability and stiffness disappeared,

• patients became more sociable, increased self-confidence and confidence in the successful completion of treatment.

At the end of orthopedic dental treatment, all patients noted a significant increase in the aesthetics of the oral cavity, the appearance of the opportunity to take full-fledged food (including solid), restoration of diction, and an increase in their psycho-emotional state.

The method of studying the level of comfort and quality of life based on data obtained when filling out the OHIP-14 dental questionnaire by patients allows you to monitor the condition of patients with CRAS and partial secondary adentia, receiving information about the physical, emotional, psychological and socially significant condition of both each patient and an entire group of patients in order to determine whether the treatment performed is effective or not.

During the study, there was a change in the comfort level and quality of life of all patients with HRA and partial secondary adentia – the total number of points for each item of the OHIP-14 questionnaire decreased.

The assessment of the patients' condition contributed to the comparison of the effectiveness of the methods of complex orthopedic dental treatment in groups.

Immediately after the start of orthopedic dental treatment in groups 2 and 3, we observed an increase in such criteria as "aesthetics".

The high effectiveness of the comprehensive orthopedic dental treatment in groups 2 and 3 is indicated by the change in the indicator of comfort and quality of life presented in the OHIP-14 questionnaire "Do you have difficulties during meals?"

The results of testing patients according to OHIP-14 showed a decrease in this indicator of comfort level in dynamics and the quality of life, like the question "Problems in the oral cavity make your diet unsatisfactory?"

The criterion of the OHIP-14 questionnaire, presented by the question "Do you have a lack of taste sensations due to problems in the oral cavity?", was low in all patients before the start of complex treatment.

After the end of orthopedic dental treatment, this criterion increased significantly in groups 2 and 3, but improved slightly in group 1 of patients.

Thus, the indicators of comfort and quality of life related to the process of eating and nutrition itself improved after the completion of orthopedic dental treatment in groups 2 and 3.

The indicator of the level of comfort and quality of life set in the OHIP-14 questionnaire "Problems in the oral cavity make your communication with people unsatisfactory?" also received a higher number of points in the 2nd and 3rd groups of patients.

In the process of orthopedic dental treatment, the criterion of the OHIP-14 questionnaire, presented by the question "Do you have increased irritability when communicating with people?" also underwent changes (decrease). This is due to the poor psychoemotional state of patients with CRAS and partial secondary adentia before the start of treatment and its significant improvement after successful completion of treatment.

Positive changes in the process of treatment, an indicator determined by the question "Problems in the oral cavity prevent you from resting, relaxing?", is also

determined by the effectiveness of orthopedic dental treatment and self-confidence returning to patients.

The criterion of the level of comfort and quality of life, defined in the OHIP-14 questionnaire, as "Do you experience a complete inability to take any action due to problems in the oral cavity?" approximately 56.1% of patients were noted in a depressed psychoemotional state who wanted to isolate themselves from everyone, worried about partial secondary adentia, having increased fatigue and fatigue, apathy, sleep problems, frequent headaches, lack of appetite.In studying the indicators of comfort and quality of life, both the data of individual patients and the readings of the OHIP-14 questionnaire scale for patient groups are important. These data allow us to dynamically observe changes in the parameters of comfort and quality of life of patients at each stage of complex orthopedic dental treatment.

Thus, after analyzing the data on the sum of points using the OHIP-14 questionnaire in each of the three groups, it can be concluded that before the start of comprehensive orthopedic treatment, 80.31% of patients (102 people) characterized their quality of life as "poor" (25-41 points), 18.12% of people (23 patients) – as "satisfactory", 1.57% of patients – as "good" (2 people); the results are shown in Figure 28.

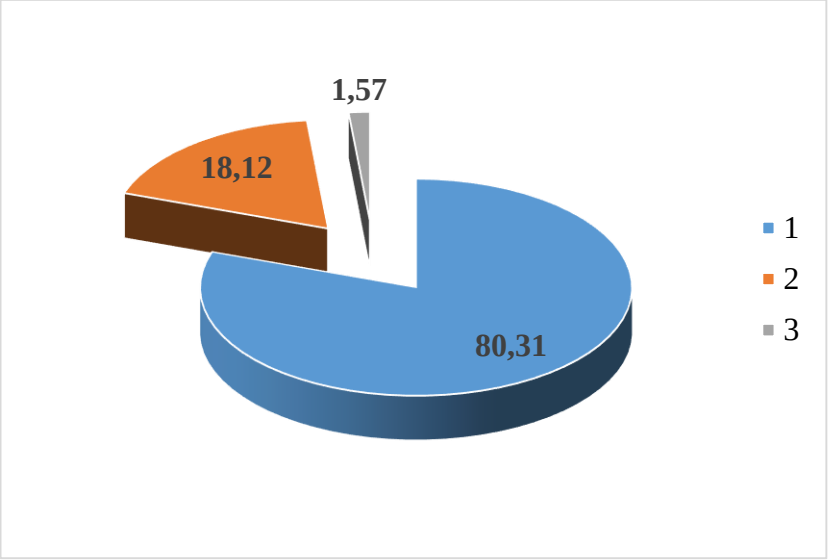

Figure 28. The quality of life level 1 is "poor", 2 is "satisfactory", 3 is "good" before the start of complex treatment in all patient groups

CLINICAL EXAMPLE №1.

Patient Z., who has a history and clinically manifested signs of CRAS and secondary partial adentia during primary treatment, underwent comprehensive orthopedic treatment, consisting in the use of the "Deflex" material for the manufacture of partial removable prostheses, drug therapy (applications to the elements of the lesion of MMM Diplen Dent LH 2 times a day for 7 days; Vinilin: 2 times a day for 5 days, exposure time of 20 minutes and physiotherapy with the Svetozar LED device.

Indicators of the quality of life were studied in patient Z. before treatment; one month after comprehensive orthopedic treatment; 3 and 6 months after the start of treatment.

We noted the correlation of clinical signs with most indicators on the scale before treatment, and their maximum value. Complaints were about the appearance of 3-5 aft five or six times a year on the mucous membrane of the upper and lower jaw, poor fixation of the prosthesis made in a state clinic, problems with chewing and diction.

The results of the patient's survey in the dynamics of orthopedic treatment are presented in Table 18, indicating that the number of points on the OHIP-14 questionnaire before treatment was 27. Thus, the quality of life was assessed as "poor", after three months this indicator decreased to 4 points, which corresponded to the assessment of "good".

The change in the indicators of the OHIP-14 dental questionnaire, on issues that record the intake of food, emotions and communication of patient Z., throughout the entire period of rehabilitation, is presented in Table 19 and Figure 29.

Table 19 - Results of the survey of patient Z. in the dynamics of complex orthopedic treatment

No. amb. cards Full name	Date and number of the visit	The issue number for OHIP-14														Total number of points
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	
342 Z. A.L.	24.10.2(1)	2	0	0	4	3	3	3	3	3	2	1	1	1	1	27
342 Z. A.L.	25.11.21(2)	2	2	2	2	1	1	1	1	0	1	1	1	0	0	15
342 Z. A.L.	27.02.21(3)	1	1	0	1	0	0	1	0	0	0	0	0	0	0	4
342 Z. A.L.	9.08.21(4)	0	0	0	1	0	1	0	0	0	0	1	0	0	0	3
342 Z. A.L.	18.10.21(5)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

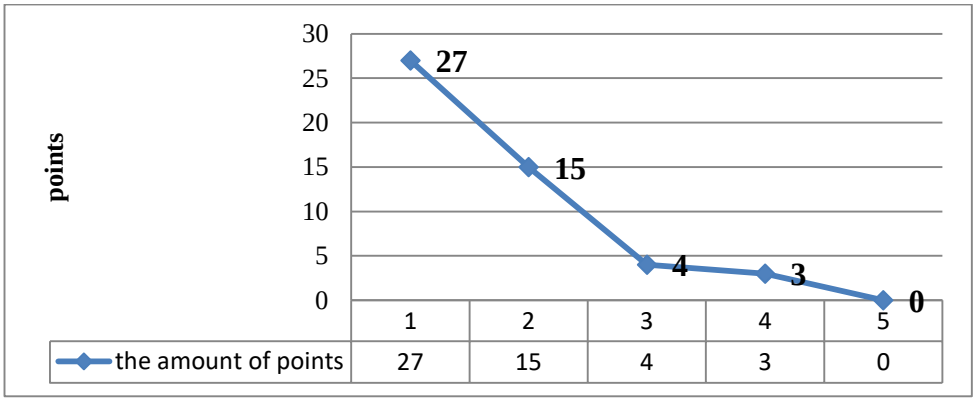

Figure 29. The test results of patient Z. in the process of rehabilitation

Analyzing the reasons for the refusal of dental services at the clinic where patients were treated earlier, and the low motivation for the treatment and prosthetics we offered, we established some quantitative parameters presented in Table 20.

Table 20 - Results of the analysis of the refusal of clinic services, where patients were treated earlier, and low motivation for subsequent treatment and prosthetics

Reasons for refusal	Quality of service	Price	Poor quality of prostheses	Couldn't helpin any way	Other reasons
Quantity (%)	105(82,68)	39(30,71)	78(61,42)	114(89,76)	12(9,45)

As follows from table 20, a fairly high percentage of patients "could not be helped" in those clinics where they applied for prosthetics. Apparently, algorithms for an integrated approach to providing orthopedic dental care to patients with CRAS have not yet been developed.

During treatment and prosthetics, these parameters changed: 108 patients (87.4%) rated the quality of life as "good", 16 people (12.6%) – as "satisfactory" and 3 patients (2.36%) – as "bad" (Figure 30).

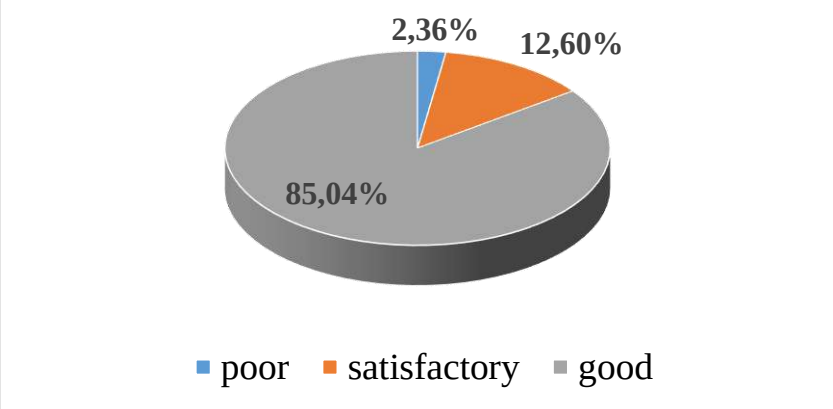

Figure 30. The level of quality of life in the process of comprehensive orthopedic treatment in all groups of patients

Summarizing the information obtained by monitoring the comfort level and quality of life of each patient with CRAS and partial secondary adentia according to the OHIP-14 questionnaire, the following results can be made:

1. A comprehensive program of orthopedic dental treatment with the inclusion of an assessment of the emotional and psychological state of the patient at all stages of orthopedic dental treatment improves the level of comfort and quality of life of patients.

2. All indicators of the comfort level and quality of life of patients have individual dynamics determined by the peculiarities of the clinical picture of the oral cavity of a particular patient with CRAS and partial secondary adentia.

3. The OHIP-14 dental test is a fairly informative tool for assessing the level of comfort and quality of life of patients with CRAS and partial secondary adentia

4. Personal experiences of patients, formulated and expressed by the patient himself, and not by the attending physician, increase the chances of successful comprehensive orthopedic dental treatment.

5. The method of studying the quality of living standards should be used in a comprehensive program of orthopedic treatment of patients with CRAS and partial secondary adentia.

3.5. The method of providing comprehensive orthopedic treatment for patients with partial absence of teeth in chronic recurrent stomatitis

It should be noted that the laboratory stages for patients of all groups were the same, and the clinical stages differed in the use of medications and physiotherapy, detailed in the chapter "Materials and methods". As an example, we present an algorithm for providing a complex of prosthetic treatment for patients of the 2nd group:

Stage 1 (clinical)

1. Taking casts from the dental arches of the upper and lower jaw (main and auxiliary). The impression is removed with an alginate mass.

2. Applications of Diplen Dent LH plates 2 times a day for 7 days; Vinylin: 2 times a day for 5 days, the exposure time is 20 minutes for problem areas of MMM and physiotherapy with the Svetozar LED device; recommendations for home use of the therapeutic and prophylactic complex developed and patented by us

1st stage (laboratory)

1. Conducting parallelometry on a working model in order to select the supporting teeth, identify their parallelism, and assess the complexity of the relief of the prosthetic bed. The stage of duplicating the model with silicone was also performed according to generally accepted rules.

2. Production of wax templates with bite rollers from basic wax "Belovaks-B" (VladMiVa, Russia). With extensive defects, an individual impression spoon

was made by thermoforming. The plates "Erkopor" and the thermoformer "Erkorit klar" were used. This technique eliminates the sweating of the monomer from plastic and has no traumatic irregularities in comparison with a spoon made of self-hardening plastic.

Stage 2 (clinical)

1. Determination of the central occlusion acceptable in this clinical case.

2. According to the indications, the "ARCUS ® evo" (Kavo) facial arch is used. If necessary, carrying out an axiography to obtain the settings of the articulator.

3. Applications of Diplene Denta LH 2 times a day for 7 days; Vinylin: 2 times a day for 5 days, the exposure time is 20 minutes for problem areas of MMM and physiotherapy with the Svetozar LED device.

Stage 2 (laboratory)

1. Fixing models in the PROTAR evo articulator (KaVo, Germany)

2. Setting artificial teeth (manufacturers may be different) on a wax basis.

Stage 3 (clinical)

1. Fitting of artificial teeth in the oral cavity. At the same time, aesthetic norms, compliance with the placement of teeth with the vertical, horizontal, canine line, smile line, the presence of fissure-tubercle contacts along occlusal curves and phonetic samples are evaluated.

2. Applications of Diplene Denta LX 2 times a day for 7 days; Vinylin: 2 times a day for 5 days, the exposure time is 20 minutes for problem areas of MMM and physiotherapy with the Svetozar LED device.

Stage 3 (laboratory)

1. Replacement of wax with dental material "Deflex".

2. Polishing and grinding of the finished orthopedic structure

Stage 4 (clinical)

1. The application of a finished prosthesis in the oral cavity with the elimination of possible defects in the occlusal surface. Determination of the quality of fixation of the prosthesis. Recommendations for patients on oral and prosthetic care and the timing of adaptation to the prosthesis.

2. Mandatory examination the next day to assess the stabilization of the prostheses and possible correction, further use of the therapeutic and prophylactic complex developed by us was prescribed - for 3-4 weeks, until the full completion of the adaptation period.

At all stages of preparation for prosthetic treatment and during the previously described follow-up periods after rational prosthetics using partial removable structures, using a patented therapeutic and prophylactic complex, patients of groups 2 and 3 did not notice the appearance of new morphological elements of the gums and red lip border. Patients of all the studied groups demonstrated psychological mood and were motivated to prosthetic treatment.

CONCLUSION

Currently, the need for prosthetic care with the use of both partial and complete removable orthopedic structures has not lost its importance. This fact is explained by the prevalence of caries and its complications, periodontal diseases, as well as chronic diseases of the oral mucosa in a certain percentage of patients, which complicate the quality of dental orthopedic care.

One of these diseases is chronic recurrent aphthous stomatitis, the clinical manifestations of which often and for a long time force patients to abandon orthopedic treatment.

Orthopedic dentists, taking into account the mechanical load on the tissues of the prosthetic bed, understand that partial or complete removable dentures will create additional trauma to the mucous membrane of the oral cavity, increase the time of adaptation to prostheses, and the material from which the structures will be made may cause an allergic reaction in the patient. In addition, it is necessary to take into account the financial situation of patients suffering from CRAS.

If the choice of design falls on a partial removable prosthesis, then the uneven atrophy of the alveolar process and the alveolar part in the area of the dentition defect, the presence, timing of the appearance and epithelialization of aft are taken into account.

In addition, it is necessary to take into account that an important link in the pathogenesis of CRAS is a decrease in factors of both local and systemic immunity, and the oral mucosa is a functional element of the immune system and, of course, can very quickly be involved in pathological functioning.

Pathological changes in the oral cavity in chronic recurrent aphthous stomatitis are accompanied by regular variations in local immunity. In order to objectify these changes, many authors propose to determine the indicators of IgG, IgA, s-IgA, lysozyme activity in mixed saliva.

In chronic recurrent aphthous stomatitis, an urgent task for orthopedic doctors is to adapt to partial removable dentures due to the introduction of elastic

materials for the bases of dentures into practice, an increase in autoimmune diseases due to a coronavirus infection.

To solve the tasks set in this study, which would help improve the provision of orthopedic dental care to patients with partial absence of teeth against the background of chronic recurrent aphthous stomatitis, we focused on two directions: the use of thermoplastic dental material "Deflex" for the manufacture of partial removable prostheses and the second - drug immunocorrective and physiotherapy in the treatment of chronic recurrent stomatitis

In order to study the adaptation of the mucous membrane of the prosthetic bed to partial removable prostheses, we studied IgG, IgA, s-IgA, lysozyme in mixed saliva, microflora of the prosthetic bed, phagocytic index and phagocytic number.

In chronic recurrent aphthous stomatitis, in order to improve the functionally active state of the oral mucosa, it is important not only competent prosthetic treatment, but also a complex of therapeutic and preventive measures that improve the trophic, metabolic and protective functions of the mucous membrane

In modern dentistry, due to the growth of immunodeficiency conditions, the growth of patients who have undergone COVID-19, as is known from scientific publications, immunocorrecting drugs are used.

One of these drugs is Azoximer bromide, which has a wide spectrum of action.

That is why we chose this drug as a means to improve adaptation to partial removable prostheses in patients with CRAS.

When solving the tasks of the conducted research, we expressed our opinion on the following issues: 1) on the change in the clinical picture of the disease and the state of the factors of local immunity of the oral cavity during the adaptation process to partial removable dentures; 2) on improving the quality of life of patients with chronic recurrent aphthous stomatitis and partial loss of teeth in dynamics after applying dentures; 3) on the change in the composition of the microflora of the prosthetic bed in these patients in dynamics after the application

of prostheses and 4) on the effect of the use of the drug "Azoximer bromide", drug therapy and diode laser radiation on the clinical condition of the oral mucosa.

Out of 127 patients with partial absence of teeth, who have a history and during orthopedic treatment clinical signs of chronic recurrent aphthous stomatitis, we created three groups with approximately the same number of subjects.

The first group, the control group, consisted of patients with chronic recurrent aphthous stomatitis, who, taking into account the condition of the oral mucosa, had partial removable orthopedic structures made of dental material "Deflex"

The second group included patients with a history of chronic recurrent aphthous stomatitis, who, after applying dentures made of dental material "Deflex", used a method developed and patented by us for the treatment of CRAS, including medication (applications to the elements of the lesion of the oral mucosa "Diplen Denta LH" 2 times a day for 7 days, Vinilin balm 2 once a day for 15 minutes for 5 days and physiotherapy with unpolarized pulsed red light for 1 minute for each element of the lesion of the mucous membrane for 5 days.

The third group consisted of patients who, before and after the manufacture of partial removable dentures from the dental material "Deflex", in addition to medication and physiotherapy (applications to the elements of the lesion of the oral mucosa "Diplen Denta LH" 2 times a day for 7 days, Vinilin balm 2 times a day for 15 minutes for 5 days and applications unpolarized pulsed red light for 1 minute for each element of the lesion of the mucous membrane for 5 days), the drug "Azoximer bromide" was prescribed sublingually 1 tablet twice a day.

Clinical examination of patients suffering from HRA and in need of orthopedic care was conducted before prosthetics and in dynamics after partial removable dentures were applied: on the first day (irritation phase), on the seventh day (period of partial inhibition – the second phase of adaptation to the prosthesis) and on the 30th day after prosthetics (phase of complete inhibition - the end of adaptation to the prosthesis).

When collecting anamnesis, special attention was paid to the subjective feelings of patients (complaints).

The total number of complaints during the observation periods analyzed by us (on the 1st, 3rd, 7th and 30th days after prosthetics) was: 135 in group 1, 99 in group 2, 78 in group 3. The significantly lower ($p<0.01$) number of complaints in groups 2 and 3 was confirmed statistically by calculating the Fisher angular transformation criterion (φ^*).

The subjective feelings (complaints) of the patients also helped to conclude that the use of a partial removable prosthesis made of thermoplastic material "Deflex" against the background of the use of complex drug therapy, including taking the drug "Azoximer bromide", applications to the lesion elements of MMM Diplen Dent LH 2 times a day for 7 days; Vinilin balm 2 times 20 minutes a day for 5 days; sessions of low–intensity LED radiation to the affected areas of the SR using the Svetozar device with parameters – wavelength - 665 ± 15 nm, in patients with chronic recurrent aphthous stomatitis significantly improves adaptation reactions.

Analyzing the timing of epithelialization and disappearance of morphological elements in patients of all groups, it should be noted that in patients of group 3, this process was achieved in 37 (92.5%) people in 4.8± 0.2 days, in the second group in 38 (84.4%) people in 6.5±0.3 days, in the first group the process of epithelialization and The disappearance of morphological elements in 39 (92.86%) people was 9.7±0.2 days

Thus, the adaptation reactions to partial removable prostheses were 2-2.5 times more effective in groups 2 and 3 than in group 1, where the treatment complex developed and proposed by us was not used.

It should be noted that according to the protocols, we carried out the correction of partial removable prostheses in all groups. The average number of corrections per 1 person turned out to be the largest in group 1: 5.5±0.47 ($tSt=3.42$); indicators in group 2 - (3.1±0.28; $tSt=2.52$, $p<0.05$), in group 3

(3.0±0.11; tSt=2.23, p<0.01)., which reliably confirms the effectiveness of the proposed method of complex orthopedic treatment

Thus, taking into account the total number of complaints, the timing of epithelialization and the disappearance of morphological elements, the period of adaptation to partial removable prostheses of patients of the 2nd group, we can say that the manufacture of a partial removable prosthesis from the material "Deflex", a complex of medicinal and physiotherapy with anti-inflammatory, decongestant and wound healing effects, and the inclusion of the drug "Azoximer bromide" in the 3rd group, which has a pronounced anti-inflammatory and anti-toxic effect, improves the quality of prosthetic care for patients with partial absence of teeth in the presence of chronic recurrent aphthous stomatitis.

Comparing the initial IgG values in the oral fluid of patients with partial tooth loss and chronic recurrent aphthous stomatitis, we noted their increase compared to the norm: the average in the groups ranged from 68.0±0.01 mg/l to 69.0±0.01 mg/l. The s-IgA content was reduced compared to the norm from 181.0±0.02 mg/l to 179.0±0.05 mg/l. A compensatory increase in IgA in response to a decrease in s-IgA indicates an aggravation of the clinical picture in the oral cavity, the average values in the groups corresponded from 256.0±0.02 mg/l to 258.0±0.01 mg/l. After the manufacture and "delivery" of partial removable dentures made of "Deflex" material, complex medical and physiotherapy treatment, an analysis of local immunity indicators was carried out after 10 days, 1 month and 2 months.

Thus, the pronounced anti-inflammatory and immunomodulatory effect of the drug "Azoximer bromide" was manifested in a decrease in the level of IgG of oral fluid in patients of the 3rd group of subjects.

As is known, "a decrease in the formation and discharge of s-IgA onto the surface of the mucous membrane is a characteristic symptom of local or general secondary immunodeficiency." At the same time, the IgG content in the oral fluid increases, since it is considered an indicator immunoglobulin of an inflammatory reaction.

IgA is quite unstable and performs its protective functions for a short time. It does not have a secretory component to protect against destruction by the enzymatic systems of saliva. If there is a deficiency of s-IgA, then as an adaptive reaction, the concentration of IgA increases.

Regulation of the immune response to foreign substances, in particular, to partial removable dentures, belongs to the secretory IgA. Since "class A antibodies on the surface of the mucous membrane of the prosthetic bed have viral neutralizing activity, agglutinate bacteria, prevent the fixation of microorganisms on the cells of the epithelial lining" [88, 114, 115, 123].

In our study, we have identified a clear trend towards an increase in the percentage of lysozyme in oral fluid in chronic recurrent aphthous stomatitis. Our study is consistent with the literature data that if "there is a decrease in the specific protection of the oral mucosa, then the content of blood monocytes and tissue macrophages that produce lysozyme compensatorily increases." The dynamics of lysozyme content in oral fluid during the period of prosthetic treatment and rehabilitation of patients showed that lysozyme activity in group 1 patients decreased on the 10th day to 26.5±0.6% and a slight increase on the 1st month compared with the 10th day (27.2±0.5), and the return at the 2nd month, almost the initial values were (28.1± 0.6), compared with the data "before treatment". In patients of the 2nd group, there was a slight increase in lysozyme activity (29.2±0.7%) on the 10th day compared with the indicator "before treatment", then there was no special increase in activity (29.9 ±0.4%), but by the end of the second month this indicator becomes 31.1 ±0.4%, approaching maximum to the values of the norm. In patients of group 3, a significant statistically significant increase in lysozyme activity was noted as early as 1 month of follow-up to 40.2±0.5%, in contrast to the indicator "before treatment", this trend continued in the 2nd month (48.5±0.4%, $p<0.05$), a significant increase ($p<0.05$) in compared to the 1st and 2nd groups.

The main link in biological resistance is immune mechanisms. By evaluating the ratios between the indicators of local immunity of the oral cavity, we have the

opportunity to get an idea of their balance, expressed by the coefficient of balance (Cb).

Evaluating Cb before prosthetics, it should be noted that the value of this indicator was high compared to the norm, which indicates a strain on the state of local immunity factors of the oral cavity and a decrease in the body's defenses of patients with complete and partial tooth loss, an imbalance of local immunity factors.

The Cb index in group 2 patients remained slightly elevated throughout the entire period of adaptation to partial removable prostheses. The value of Cb on the 10th day after prosthetics was 2.28±0.06 ($p<0.05$), on the 1st month it was - 2.18±0.08 ($p<0.05$), which is less than the indicators "before treatment", and the second month showed a value of 2.38±0.05.

Thus, according to the research results, in There was a slight imbalance between the factors of local immunity of the oral cavity in the oral fluid of patients of the 2nd group throughout the entire period of adaptation to partial removable prostheses

The positive dynamics of the Cb (coefficient of balance) of the factors of local oral immunity in patients of the 3rd group was observed already on the 10th day after prosthetics. If initially the value of this indicator was increased, then after 10 days it decreased and amounted to 2.09 ±0.06 ($p<0.05$), a statistically significant difference from the indicator "before treatment" and group 1. At the 1st month after prosthetics, Cb came close to the norm of 1.32±0.04 ($p <0.05$), at the 2nd month 1.35±0.03 ($p<0.05$). This fact confirms a decrease in the intensity of local humoral immunity in patients of group 3, who significantly exceeded the similar indicators of patients of group 1 at all follow-up periods.

Thus, in patients of group 1, an increase in the imbalance between the factors of local immunity of the oral cavity was recorded throughout the entire period of adaptation to partial removable prostheses, while in patients of group 2, who combined the use of prostheses from "Deflex" and complex drug and physiotherapy, and group 3 partial removable dentures were made from the dental

material "Deflex" and medical, including the drug "Azoximer bromide" and physiotherapy, an increase in the protective characteristics of the oral fluid was noted. This helped to eliminate the imbalance between the factors of immunological resistance of the oral cavity.

The results of the bacteriological study showed that pathogenic and conditionally pathogenic microorganisms such as: St.aureus, Candida albicans, Neisseria, Klebsiella, Str.piogenes, Str. Pneumonia, Etc. were detected in patients of all three groups. Faecalis. Due to the weakening of the immune protection of the oral mucosa, the number of microbial associations, in particular, anaerobes, increases. Enterococcus faecalis and fungi of the genus Candida appear, which indicates dysbiosis of the oral cavity.

Analyzing the results of the bacterial species in the material taken from the mucous membrane of the prosthetic bed in group 1 patients, it was found that after 10 days of observation, an increase in the growth of pathogenic and opportunistic flora was recorded in this group of patients (for example, Str. Rneumonia before treatment - 4.8± 1.0 c.u., by 10day 1 - 4.8 ±0.1

c.u., a month later - 4.2± 0.1 c.u.)

In the 2nd group of the studied patients, the growth of pathogenic and opportunistic flora detected before prosthetics remained virtually at the same level with minor downward changes after 10 days and the 1st month of the study (for example, Str. Rpeimopia before treatment - 4.8 ± 0.2 c.u., on the 10th day - 1.8 ± 0.2 c.u., in a month – 0.8 ± 0.2 c.u.).

In patients of the 3rd group using Azoximer bromide in a complex of orthopedic and drug treatment, on the 10th day of the study, the number of colonies of pathogenic flora significantly decreased or did not sow at all. On the 30th day, the pathogenic flora in the 3rd group of patients was not actually sown (for example, Str. Rpeimopia before treatment was 4.7± 0.3 c.u., on the 10th day - 0 c.u., a month later – 0 c.u.).

Thus, the use of the proposed method of complex drug and physiotherapy, including Azoximer bromide, as an immunocorrector of local immunity, made it

possible to accelerate the epithelization of morphological elements of the prosthetic bed, as well as increase the resistance of the oral mucosa to the negative effects of a partial removable prosthesis during the adaptation period.

In addition, there is an increase in local immunity indicators. And as a result, the number of visits for the purpose of prosthesis correction decreases, the quality of life of patients with partial absence of teeth improves not only at the initial stage of adaptation, but also during the entire time of using a removable prosthesis.

At the clinical stages of preparation and comprehensive orthopedic treatment, as well as during follow-up periods after rational prosthetics using partial removable structures, against the background of the use of a patented therapeutic and prophylactic complex, no rash of new morphological elements characteristic of chronic recurrent aphthous stomatitis was observed in all patients in the area of the prosthetic bed and on the red border of the lips. Patients of all three groups demonstrated psychological mood and high motivation for prosthetic treatment.

According to numerous data, it is known that the parameters of comfort and quality of life of patients, along with various clinical indicators, are included in the system of criteria for evaluating the effectiveness of treatment and represent the real basis for choosing orthopedic dental treatment.

Summarizing the information obtained by monitoring the comfort level and quality of life of each patient with CRAS and partial secondary adentia according to the OHIP-14 questionnaire, we can say that a comprehensive program of orthopedic dental treatment developed and patented by us, including an assessment of the emotional and psychological state of the patient at all stages of orthopedic dental treatment improves the level of comfort and quality of life patients, increases the level of motivation for treatment. Before the start of comprehensive orthopedic treatment, 80.31% of patients (102 people) described their quality of life as "poor" (25-41 points); 18.12% of people (23 patients) rated it as "satisfactory", 1.57% of patients – as "good" (2 people). During treatment and prosthetics, these parameters changed: 108 patients (87.4%) rated the quality of life

as "good", 16 people (12.6%) – as "satisfactory" and 3 patients (2.36%) – as "poor".

Thus, an integrated approach to orthopedic dental treatment of patients with chronic recurrent aphthous stomatitis (in remission) in need of prosthetics due to partial absence of teeth provided the necessary effectiveness and safety of dental care, contributed to strengthening the psycho-emotional sphere, increasing the level of motivation for treatment and maintaining a certain comfort of the quality of life of patients.

The reliable results obtained during the work allowed us to assume that the goal was consistently achieved. All of the above allows us to formulate the following conclusions and give practical recommendations.

FINDINGS

1. An integrated approach to orthopedic dental treatment with the inclusion of an assessment of the emotional and psychological state of the patient at all stages improves the level of comfort and quality of life of patients. Already at the 2nd week of treatment, there was not only increased motivation for orthopedic treatment, but also psychoemotional changes in a positive way.
2. During the clinical and laboratory assessment of the state of the prosthetic bed in patients using partial removable dentures made of dental material "Deflex" against the background of immunological correction with Azoximer bromide, there is a decrease in complaints over a weekly period of 3.4 times compared with the first group and 1.9 times compared with the second group, the risk of exacerbation of chronic recurrent aphthous stomatitis, the functions of speech and food intake are significantly harmonized ($p<0.05$), the time of adaptation to partial removable prostheses is reduced.
3. The developed method of complex prosthetic treatment of patients with CRAS reliably revealed normalization of factors of local immunological protection of the oral cavity (IdA, IgG, s-IgA, lysozyme) and parameters of the quality of life of patients during the adaptation period, starting from the 10th day of observation, which confirms its effectiveness and efficacy of the drug Azoximer bromide.
4. Developed recommendations for the combined use of a rationally selected orthopedic structure made of thermoplastic material against the background of medication and physiotherapy, reduces the risk of exacerbation of chronic recurrent aphthous stomatitis, which increases the effectiveness of prosthetics and demonstrates the motivation and psychological attitude of patients to prosthetic treatment.

PRACTICAL RECOMMENDATIONS

1. The study of the condition of the mucous membrane of the prosthetic bed, morphological elements of the oral cavity, the time of occurrence and duration of remission in chronic recurrent aphthous stomatitis is necessary to assess the process of adaptation of patients to partial removable prosthetics.
2. Before prosthetic treatment, an immunological examination of mixed saliva is recommended for all patients suffering from chronic recurrent aphthous stomatitis, which helps to identify violations of local oral immunity.
3. In the complex orthopedic treatment of patients with partial secondary adentia and chronic recurrent aphthous stomatitis, the use of standard medication and physiotherapy, including the drug Azoximer bromide, is recommended.
4. Optimal for patients with chronic recurrent aphthous stomatitis with partial absence of teeth is the manufacture of structures made of thermoplastic materials.
5. The quality of dental orthopedic care for patients with CRAS is impossible without the coordination of orthopedic dentists and internists with internists

LIST OF ABBREVIATIONS AND SYMBOLS

IgA, G –immunoglobulins AandG

IL- interleukins

QoL – qualityoflife

Cb - the coefficient of balance of local immunity factors

OHIP-19-RU - «Dental Health Impact Profile»

s-Ig – secretory immunoglobulin

MMM – themembral mucosa of the mouth

PI – phagocytic index

PN – phagocytic number

CRAS – chronic recurrent aphthous stomatitis

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APPENDICES

APPENDICES1

Individual patient examination card

1. Official data:

Full name

Age (y.o.)

Gender

Profession

medical history №

2. Anamnestic data:

A form of chronic recurrent aphthous stomatitis

Is the patient using removable dentures for the first time or repeatedly

At what age does the state of the oral mucosa change

When the disease went into remission

Does the patient note the connection of CRAS with the conditions of life, work, and past illnesses

What common diseases does the patient suffer from (concomitant pathology)

Allergic history

The presence of bad habits

2. Oral examination:

Salivation (abundant, meager, normal).

The presence of periodontal diseases:

- gingivitis
- periodontitis
- periodontal disease

The condition of the dentition (the presence of defects):

Dental formula (K - crown, O - absent, C - caries, I - artificial tooth):

Characteristics of Kennedy dentition defects:

Grade 1, Grade 2, Grade 3, Grade 4

The nature and degree of atrophy of the alveolar processes in patients with partial absence of teeth (description):

2. The condition of the mucous membrane of the prosthetic bed before the application of partial and complete removable dentures:

General characteristics of theoral mucosa:

Suplet classification:

1st class 2nd class 3rd class 4th class

Colour

Humidity

Consistency

The presence of pathological formations (polyps, scars, aphthae, erosions, ulcers, etc.)

3. Complaints of the patient after the application of complete and partial removable prostheses in dynamics (symptoms):

On the 1st day

On the 3rd day

On the 7th day

On the 30th day

The state of the prosthetic bed after applying prostheses in dynamics:

A) on the upper jaw:

On the 1st day:

The presence of areas of hyperemia:

The presence of traumatic erosions

The presence of traumatic ulcers

On the 3rd day:

The presence of areas of hyperemia:

The presence of traumatic erosions

The presence of traumatic ulcers

On the 7th day:

The presence of areas of hyperemia:

The presence of traumatic erosions

The presence of traumatic ulcers

On the 30th day

The presence of areas of hyperemia:

The presence of traumatic erosions

The presence of traumatic ulcers

B) on the lower jaw:

On the 1st day:

The presence of areas of hyperemia:

The presence of traumatic erosions

The presence of traumatic ulcers

On the 3rd day:

The presence of areas of hyperemia:

The presence of traumatic erosions

The presence of traumatic ulcers

On the 7th day:

The presence of areas of hyperemia:

The presence of traumatic erosions

The presence of traumatic ulcers

On the 30th day

The presence of areas of hyperemia:

The presence of traumatic erosions

The presence of traumatic ulcers

Number of corrections:

The maximum area of inflammation of the mucous membrane of the prosthetic bed:

2. Data from laboratory research methods:

Dynamics of indicators of local immunity:

Indicators of local immunity	Before treatment	After 10 days	After 1 month
s-IgAmg/l			
IgAmg/l			
IgGmg/l			
Lysozyme activity (%)			
Phagocytic index %			
Phagocytic number			

The coefficient of balance of local immunity factors (Cb):

_____

The results of a microbiological study.

The name of the microorganism	Before treatment	After 10 days	After 1 month
E.coli			
St.aureus			
Neisseria			
Ent.faecalis			
Klebsiella			
Str.piogenes			
Str. Pneumania			
Str.epidermidis			
Candidaalbicans			

APPENDICES 2

РОССИЙСКАЯ ФЕДЕРАЦИЯ

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ФЕДЕРАЛЬНАЯ СЛУЖБА
ПО ИНТЕЛЛЕКТУАЛЬНОЙ СОБСТВЕННОСТИ

(12) ОПИСАНИЕ ИЗОБРЕТЕНИЯ К ПАТЕНТУ

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RU 2795869 C1

RU 2795869 C1

(54) **Способ профилактики рецидивов хронических заболеваний слизистой оболочки полости рта после ортопедического лечения съемными ортопедическими конструкциями**

(57) Реферат:

Изобретение относится к медицине, а именно к стоматологии, и может быть использовано при профилактике рецидивов хронических заболеваний слизистой оболочки полости рта после ортопедического лечения. Проводят физиотерапевтическое воздействие и медикаментозную терапию. В качестве физиотерапевтического воздействия осуществляют лазеротерапию. При этом оказывают воздействие на зоны расположения морфологических элементов на слизистой оболочке полости рта в течение 3 минут, курс воздействия составляет 5 сеансов. Параллельно с лазеротерапией лазером с длиной волны 624 нм используют медикаментозную терапию с обработкой непосредственно морфологических элементов на слизистой оболочке полости рта путем наложения стоматологической самоклеящейся пленки «Диплен-Дента ХЛ», состоящей из двух слоев - гидрофильного, обладающего способностью приклеиваться к влажной слизистой оболочке, и гидрофобного слоя, который пластичен, хорошо моделируется на поверхности слизистой рта и изолирует