



X-Ray Analysis of Apex-Foresis Healing In Granulomatous and Granular Forms of Chronic Apical Periodontitis

Xojiev Xurshid Xamidovich

Bukhara State Medical Institute

Relevance.

The inflammatory process in the periodontium in people over 50 years of age is the cause of tooth extraction in more than 50% of cases. Currently, after endodontic treatment, which was previously carried out using resorcinol-formalin and zinc oxide–eugenol pastes, X-ray examination of teeth revealed periapical destructive changes in 80% of cases and in 50% of cases - the condition of poorly sealed root canals. The method of filling root canals with "one paste", as well as the resorcinol-formalin method for impenetrable root canals does not guarantee their high-quality obturation and can lead to the development of periapical foci of chronic infection. This indicates the importance of high-quality endodontic treatment, which allows to prevent microbial contamination, as well as the impact of their waste products on surrounding tissues.

New technologies and methods used in clinical practice lead to a reduction of destructive processes in the tissues around the teeth and complete functional rehabilitation. In this regard, special attention is paid to the development of scientifically based concepts for improving the currently used clinical and functional apparatus and modern methods of root canal treatment. The substantiation of complex treatment mechanisms for patients with various clinical forms of apical periodontitis, the use of new physiotherapeutic methods in the treatment, and the evaluation of the effectiveness of treatment are considered one of the urgent problems of our time[1.3.5.7.9.11.13.15.17].

To improve the early diagnosis of chronic apical periodontitis in patients and to improve complex treatment methods. In this regard, tasks such as improving the efficiency, quality and popularity of medical care, as well as the formation of a system of medical standardization, the introduction of high-tech methods of diagnosis and treatment have been identified. These tasks, the improvement of methods of endodontic treatment of chronic apical periodontitis using modern physiotherapy methods and the justification of the effectiveness of treatment are considered one of the most relevant scientific areas of modern dentistry.

The prevalence of complications of dental caries – pulpitis and periodontitis - is significantly higher and reaches 93.2%. Patients with chronic apical periodontitis (CAP) account for 30-35% of the total number of patients attending the therapeutic dental department (Manuilova E.V., Mikhchalchenko V.F., 2014; Sirak S.V. et al., 2014). HAP is considered to be the cause of common somatic diseases such as rheumatism and glomerulonephritis, causing chronic intoxication and sensitization of the body, which pose a great danger to the body, and can also lead to tooth loss. The treatment of periodontitis consists in opening and expanding the tooth cavity in the apical region, mechanical treatment, antiseptic treatment of the root canal and elimination of inflammation by its obturation (Abdulkhakova N.S., 2022).

In terms of the frequency of visits to medical institutions, HAPS occupy the third place after dental caries, as well as pulpitis (Tarasenko S.V., 2015; Sevbitov A.V., 2016; Tarasenko S.V., 2016;

Shayymbetova A.R., 2017). Among those who apply to the department of therapeutic dentistry, patients with various forms of HAP make up 30-40% (Radyshevskaya T.N., 2016; Tarasenko S.V., 2016; N.N. Dessaune., 2018).

HAP is most often observed in people of working age, it develops as a result of complications of dental caries (Kuratov I.A., 2015; Tarasenko S.V., 2015; Rosenbaum A.Yu., 2017; N.S. Soukos., 2006). According to Demyanenko S.A. et al., the frequency of severe caries in people aged 34-47 years, leading to the development of HAP, reaches 50% (Demyanenko S.A., 2017). At the same time, a significant part of them are considered to be patients of working age (Aksenova T.V., 2014).

In 75% of cases, HAP develops in patients with conservative treatment of pulpitis or periodontitis in the anamnesis (Huh J.K., 2016; Iordanishvili A.K., 2017). According to Ananyeva V.A. et al. (Ananyeva V.A., 2016), chronic destructive periodontitis in more than a third of cases is the result of improper endodontic dental treatment, the quality of its transfer clarifies the prognosis of restoration of tooth function.

Thus, the prevalence of HAP among children aged 6-12 years exceeds 60% (Samokhina V.I., 2014). Factors affecting the formation of HAP in children are atmospheric pollution with iron, nitrogen, hydrocarbons, toluene, manganese, excess iron in drinking water and lack of calcium (Samokhina V.I., 2014). The most frequently identified cause of HAP in children remains a complication in the form of caries, which ultimately leads to tooth extraction in more than half of all cases and creates conditions for the formation of secondary adentia, in which 85-98% of patients develop other dental diseases (Atezhanov D.O., 2017; Zamulin D.O., 2017). According to statistics, tooth loss as a result of HAP in children aged 14-15 years reaches 5.5 – 8% (Demyanenko S.A., 2017). According to Valeeva Z.R. et al., in more than 60% of cases, the removal of the first and second molar teeth in children occurs as a result of an exacerbation of the chronic inflammatory process – HAP and periapical abscess (Valeeva Z.R.). It is the high frequency of HAP in molar teeth that can be associated with its eruption, the morphology of the tooth cavity, as well as the appearance of microorganisms in carious cavity, as well as their rapid penetration into the root canal system (CCM) (Kukushkin V.L., 2017).

HAP is also one of the main causes of tooth loss and the development of a number of somatic diseases, so the problem of its treatment is very relevant (Shashmurina V.R., 2018). Its destructive forms (granularization, granulomatous, cyst granulomas) are more common among HAPS (Radyshevskaya T.N., 2016; Tarasenko S.V., 2016). The prevalence of destructive forms of chronic periodontitis in the structure of periodontal diseases ranges from 9% to 21% (Gbadebo S.O., 2014).

The causes of HAP can be infectious, traumatic and medicinal in nature (Yarmova E.N., 2015; Tarasenko S.V., 2016). Traumatic HAP is the result of damage to the tooth: injuries, microtrauma, fractures, damage to the tooth as a result of overload, etc., which leads to the destruction of the periodontium and the position of the tooth and causes the deep development of inflammation.

Drug HAP can develop as a result of ingestion of aggressive substances into the tissues of the upper periodontium (deactivating drugs, antiseptics, formalin, ethylenediaminetetraacetic acid (EDTA), etc. (Yarmova E.N., 2015). This leads to the development of an acute apical inflammatory process (Yarmova E.N., 2015).

Traumatic and drug-induced AP is often aggravated by the association of pathogenic microflora and, accordingly, passes into infectious AP (Yarmova E.N., 2015). Infectious AP is often a complication of pulpitis, as a result of which pathogenic microflora penetrates into the periodontal ligaments through the apical opening and forms an inflammatory focus around the apical surface of the tooth root (Yarmova E.N., 2015; Mozgovaya L.A., 2013). Also, in endodontic treatment, periodontal damage is important, in which the infectious composition of the root canal exits from the tip of the root into the periapical region (Yarmova E.N., 2015).

It should be noted that, depending on the path of penetration of infectious agents, AP is divided into intradental and extradental types (Metzger Z., 2013). The inflammatory process in extradental AP develops due to the passage of infection through the surrounding tissues (sinusitis, osteomyelitis, etc.) (Metzger Z., 2013).

In Uzbekistan, HAP is treated in several ways, and in 14% of cases, the source of foci of chronic infection is the non-sealed root canals of teeth, and in 76.4% of cases, it was found that teeth with partially sealed canals are the cause (Boimurodov Sh.A., 2014). Earlier, an X-ray examination conducted after endodontic treatment using resorcinol-formalin and zinc dehydrogenol paste revealed periapical destructive changes in 80% of cases and in 50% of cases poorly sealed root canals (Kamilov H.P., 2010; Shamsiev R.A., 2016). In the work of Popova I.I., it was shown that the quality of root canal filling is only 71.2% of cases, according to other authors, it was shown that X-ray control is carried out in 69.4% of cases (Shamsiev R.A., 2018; Azamatovich S.R., 2019).

Methods of filling root canals with "one paste", as well as the use of the resorcinol-formalin method in impenetrable root canals do not guarantee their high-quality obturation and can lead to the development of periapical foci of chronic infection (Zoirov T.E., 2016; Yusupalieva D.B., 2019). This underlines the importance of high-quality endodontic treatment, which allows to prevent the effects of microbial contamination, as well as their waste products on surrounding tissues (Zoirov T.E., 2016; Yusupalieva D.B., 2019). Clinical experience has shown that the delayed root canal filling method significantly expands the dentist's capabilities in the conservative treatment of chronic apical periodontitis, makes endodontic treatment safer, more physiological and allows you to determine the result in advance [2.4.6.8.10.12.14.16.18.20.22.24.26.28.30.32].

The purpose of the study The aim is to increase the effectiveness of the treatment of chronic apical periodontitis by improving endodontic treatment using the method of fluctuation separately and in combination with apex-forez.

the etiology and pathogenesis of the development of chronic apical periodontitis, taking into account the urgency of the problem, the place of microflora and its role in the formation of the disease, methods of X-ray examination in the diagnosis and treatment of the disease, based on scientific sources of domestic and foreign researchers, analyzed and made conclusions on modern endodontic problems and solutions in the treatment of the disease.

The patients involved in the study were divided into 4 groups depending on the type of treatment performed: the teeth of the patients of the first group (n=14) were treated in the traditional way. At the same time, endodontic treatment of the dental canals was performed using the Crown-Down method, the canals were treated with an antiseptic 1% chloramine solution and 2% sodium hypochloride solution.

The teeth of the patients of the second group (n=15) were treated with depophoresis with the "Original II" device (Germany) used in addition to the traditional method. With the method of depophoresis with copper-calcium hydroxide, the carious cavity was initially necroectomized, the tooth cavity was opened and the root canals were mechanically and medicinally treated. To achieve sufficient effectiveness and lasting effect, three depophoresis sessions were used with an interval of 8-14 days.

In addition to the traditional method, apex-forez was used in patients of the third group (n=19). To do this, a Teflon-protected silver-copper electrode was used, pre-elongated (by 2/3 - 1/2 the length of the root, up to 25 file sizes), inserted into the root canal soaked in saline solution.

To do this, using a sterile paper absorber, material is taken from the root canal of the tooth and placed in a semi-fertile nutrient medium for transportation. Under anaerobic conditions, pure cultures of obligate and facultative anaerobic bacteria were planted in oxygen-free anaerostats containing 80% nitrogen, 10% hydrogen, 10% carbon dioxide, with the addition of gemin (5 mg/l) and menadion (0.1

mg/l) using hemagar-Brain-Art Infusion from Difco". A Palladiev catalyst was used to reduce oxygen residues. Biochemical identification of pure cultures was carried out using API (France) and Roche (Germany) test systems. The results were recorded in an anaerostat at 37°C in Petri dishes after 7 days of incubation.

To analyze and compare the results of X-ray examination, the periapical index PAI proposed by D. Qrstavik et al. (1986) and modified by A.M. Solovyova (1999) was used.

The results of the microbiological study showed that before the start of various treatment methods, a diverse microbial landscape in the form of obligate and facultative anaerobic bacteria was revealed in the material obtained from the root canals of teeth. The studied material revealed the largest number of streptococci and staphylococci: *Str. sanguis* - in 52% of patients, *Str. mutans* - in 68% of patients, *Str. salivarius* - in 52%, *St. Louis. epidermidis* - in 41% of patients. In addition, 38% of patients had *Peptostreptococcus anaerobius* in their root canals, and 12% had *Clostridium* spp. and 14% have *Candida albicans* [19.21.23.25.27.29.31.33.35].

A study of anaerobic bacterial strains from the root canal of teeth before treatment showed that the growth retardation zones in all strains of facultative anaerobic bacteria were less than 5.1 (3.7-5.0 mm) in the treatment of chronic apical periodontitis with traditional therapy. During depophoresis with copper and calcium hydroxide, the current strength is 1.5 mA X minutes, when applied - 4.9 (3.5-4.8 mm). Such values of inhibition of growth of the test culture in accordance with the existing criteria for evaluating antibacterial activity can be evaluated as traditional treatment and the weak antibacterial effect of depophoresis at a dose of 1.5 mA x minutes. In cases where the magnitude of the electric current during depoforesis was 2.5 mA X minutes, the diameter of the growth retardation zones corresponded to an antibacterial effect with moderate severity (growth retardation zones-6.8-9.3 mm). The most pronounced antibacterial effect was observed in cases when the dose of depophoresis was equal to 5 mA x minutes. All the studied bacterial colonies had growth retardation areas of more than 15.1 mm (15.1-21.8 mm) in diameter. Based on this, it was found that the optimal doses of depophoresis with antibacterial action are 2.5-5 mA x minutes.

The area of growth retardation of all strains of facultative anaerobic bacteria studied during apex-foresis treatment of chronic apical periodontitis using a silver-copper electrode was estimated at 5.1 mm (3.9-5.0 mm) at a dose of 1.5 mA per minute, which indicates a weak antibacterial effect of this dose of apex-foresis.

During treatment, when the current was increased to 2.5 mA x minutes, the diameter of the growth retardation sites was 8.6-9.6 mm, which corresponds to a moderately pronounced antibacterial effect. The most pronounced antibacterial effect was found at a dose of apex-foresis of 5 mA x minutes, which means that in the colony of the studied bacteria, the diameter of the growth retardation zones was more than 15.4 mm (15.4-22.4 mm).

In the case of joint endodontic treatment of chronic apical periodontitis using apex-foresis and fluctuation, a more pronounced antibacterial effect was observed compared to the case when they were used separately. Thus, the strains of anaerobic bacteria studied with the combined use of apex-foresis and fluoridation methods had an average diameter of 20.4 mm (17.8-24.5 mm) in the growth retardation zones, which indicates an antibacterial effect 4.8 times higher than the result obtained with conventional treatment. This is 1.6 times higher (12.8 mm, respectively) compared with depoforesis and 1.5 times higher (13.2 mm, respectively) compared with apex-foresis.

It is worth noting that only 6 (7.4%) of 81 patients with chronic granulating periodontitis, in whom only one form of bacteria was studied in the root canals of the tooth, while in most cases (92.6%) causal associations involving 2 to 6 types of microbes were reported. Thus, the largest range of microflora was isolated from the material from patients with chronic granulating periodontitis, while monoinfection was not observed at all in patients with chronic granulomatous periodontitis.

Streptococcus and Candida were detected in all forms of the disease in patients before treatment, while streptococcal microflora prevailed in the associations.

When comparing data on the quantitative and qualitative composition of microflora in the root canal of teeth after therapy with various types of endodontic treatment, a significant decrease in the amount of microflora was observed, depending on the type of treatment used (Table 1). In patients with diagnosed chronic apical periodontitis, with traditional treatment, contamination of the root canals, although it tended to decrease, but in most cases this did not lead to a significant difference ($P>0.05$).

When applying root canal depoforesis with copper-calcium hydroxide after a course of treatment, the amount of microflora decreased from 7.6-9.8 Lg KOE/ml to 2.8-6.3 Lg KOE/ml, that is, almost 2 times. At the same time, complete decontamination (no growth of microorganisms was observed) It was reported in 57.8% of cases, in other cases – pollution significantly ($P<0.05-0.01$) decreased.

It was found that endodontic dental treatment with apex-foresis using a silver-copper conductor leads to a significant 3.3-fold ($P<0.05-0.01$) decrease in all types of microflora from 7.5-12.1 Lg KOE/ml to 1.9-4.1 Lg KOE/ml, especially *Str.sanguis*, *Str.mutans*, *Str.salivarius* and *Clostridium spp.* there is a clear decrease in the content (Table 1). Complete decontamination was observed in 66.8% of patients. It follows from this that the treatment of chronic apical periodontitis using apex-foresis had a 1.3 times greater antibacterial effect than depoforesis the root canal.

Thus, the data obtained showed the most pronounced (1.5-2.5 times greater) antibacterial efficacy of the treatment method in combination with silver-copper conductor apex-foresis and the method of fluctuation in facultative anaerobic microbial relationships, which are most common in periodontitis, as well as the most resistant to antimicrobial effects.

Of the 81 patients with granularization and granulomatous forms of chronic apical periodontitis (108 multi-root teeth) who participated in the study, 31 (38.3%) were men, and 50 (61.7%) were women. Of the 31 men, 17 (54.8%) reported granularizing periodontitis (in 26 multi-root teeth) and 14 (45.2%) reported granulomatous periodontitis (in 26 multi-root teeth). Of the 50 women, 28 (56%) were diagnosed with granularization periodontitis (in 28 multi-root teeth) and 22 (44%) with granulomatous periodontitis (in 28 multi-root teeth).

Conclusion. When analyzing the results of treatment of granulomatous and granularizing forms of chronic apical periodontitis using various types of therapy, 6 (28.5%) patients out of 14 who received traditional treatment had complications on the 7th-14th day of treatment in the form of pain in the area of the treated tooth and gum hyperemia. Similar complications were reported with the use of root canal depoforesis in 2 patients (13.3%) out of 15 men and women, with apexoresis in 19 patients - in 1 patient (5.2%), and in 33 patients no complications were detected at all with the combined use of apexoresis and fluoridation.

LITERATURE USED

1. Khojiev Kh. Kh., Khabibova N. N. Improving of endodontic treatment of chronic upper periodontitis using depo-,apexphoresis and phisiotherapeutic method of fluctuorization //European Journal Of Molecular & Clinical Medicine. – 2020. – Т. 7. – №. 3. – С. 3015-3022. (Scopus – Q3)
2. Хожиев Х. Х. Способы лечение периодонтитов современными методами //Тиббиётда янги кун. – Бухоро. – 2020. – №. 2(30/2). – С. 300-302. (14.00.00; №22)
3. Хожиев Х. Х., Хабибова Н. Н. Лечение периодонтитов современными методами //Тиббиётда янги кун. – Бухоро. – 2021. – №. 2(34). –С. 482-486. (14.00.00; №22)

4. Khozhiev Kh. Kh. Estimation of the effectiveness of application of the combined method of treatment of chronic upper periodontitis //World Bulletin of Public Health. – 2021. – Т. 3. – С. 88-94. (Impact factor – 7.545)
5. Хожиев Х. Х. Оптимизация эндодонтического лечения хронического верхушечного периодонтита с применением депо-,апексфореза с комбинированием метода флюктуоризации //Тиббиётда янги кун. –Бухоро. – 2021. – №. 4(36). – С.173-180. (14.00.00; №22)
6. Хожиев Х. Х. Совершенствование и научное обоснование методов эндодонтического лечения хронического верхушечного периодонтита //Тиббиётда янги кун. – Бухоро. – 2022. – №. 12(50). – С. 228-233. (14.00.00; №22)
7. Хамраева Д. Ш., Хожиев Х. Х. Оценка способов лечения больных периодонтитов современными методами //Теория и практика современной науки. – 2018. – №. 4 (34). – С. 728-731.
8. Hojiev H. H., Xabibova N. N. “Improving Endodontic Treatment of Chronic Apical Periodontitis with the Use of Depo of Ipress and Physiotherapy Method of Fluctuorization” //International Journal on Integrated Education. – 2020. – Т. 3. – №. 9. – С. 224-228.
9. Hojiev H. H., Xabibova N. N. Microbiological evaluation of the effectiveness of depot, apex of fluctuorization and electrophoresis in complex treatment of chronic apical periodontitis //Middle European Scientific Bulletin. – 2020. – Т. 4. – С. 21-25.
10. Xojiyev X.X. and Xabibova N.N. Method for treating periodontitis modern methods //World Journal Of Pharmaceutical Research. –2020. –Т. 9. – №. 12. –С. 33-36.
11. Xojiev H.H. Effects treatment of apical periodontitis with the use of depot-, apex-foresis with a combined methods of fluctuation //Middle European Scientific Bulletin. – 2020. – Т. 27. – С. 34-36.
12. Xojiev H. H. Substantiation of Methods of Endodontic Treatment of Chronic Apical Periodontitis //Scholastic: Journal of Natural and Medical Education. – 2022. – Т. 1. – С. 24-29.
13. Xojiev X.X. To give a microbiological assessment of the effectiveness of separate and combined depot,apex-foresis with the joint application of the method of fluctuation in the endodontic treatment of chronic apical periodontitis //International Journal of Health Systems And Medical Science. – 2022. – Т. 1. – №. 4. –С. 52-58.
14. Xojiev X.X. Improvement of Endodontic Treatment Methods for Chronic Periodontitis //Multidimensional Research Journal. – 2022. – Т. 1. – №. 4. – С. 94-98.
15. Xojiev X.X. To conduct a clinical x-ray examination before and after the separate and combined use of depot, apex-foresis with the joint application of the method of fluctuation in chronic apical periodontitis //European Journal Of Modern Medicine And Practice. – 2022. – Т. 2. №. 10. – С. 98-102.
16. Khozhiev X. X., Khabibova N.N.Evaluation of the effectiveness of depo-,apex-forez and fluctuorization in the complex treatment of chronic apical periodontitis //International Congress on Modern Education & Integration Engineering Journal For Research And Development. – 2020. – Т. 5. – С. 46-48.
17. Xojiev X.X. Clinical and radiological characteristics of the long-term effects of the use of depot-, apex – foresis with the combination of the method of fluoridation in chronic apical periodontitis //International Conference Of Academic Integrity. Online Conference Platform. June-July 2022. – С. 44-45.
18. Xojiev X.X. Treatment methods for chronic periodontitis //Стоматологик касалликлар профилактикаси ва болалар стоматологиясининг долзарб муаммолари III Халқаро Илмий Амалий Анжумани. 19-23 Сентябрь. – С. 126-127.

19. Хожиев Х.Х. Методика эндодонтического лечения хронического верхушечного периодонтита с применением депофореза гидроксида меди-кальция, апекс-фореза с использованием серебряно-медного проводника и комбинированием метода флюктуоризации //Ta'lim va Innovatsion Tadqiqotlar Ilmiy va Ilmiy Texnik Onlayn Konferensiya. – 5-август. 2022. – С. 165-166.
20. Хабибова Н.Н., Хожиев Х.Х. Способ оценки микрофлоры корневого канала при применении комбинированного метода лечения хронического верхушечного периодонтита // Услубий тавсиянома. – Бухоро, 2021. – 16 б.
21. Хабибова Н.Н., Хожиев Х.Х. Оптимизация эндодонтического лечения хронического верхушечного периодонтита с применением апексфореза с комбинированием метода флюктуоризации // Услубий тавсиянома. – Бухоро, 2021. – 16 б.
22. Эронов Ё. К. ANALYSIS FOR DETERMINING THE FEATURES OF LOSHLY-YUSHENKO-KRASNAGORSKY IN CHILDREN CEREBRAL PERSPECTIVE WITH CHARACTERISTICS OF THE STRAIN COMPOSITION //Новый день в медицине. – 2020. – №. 2. – С. 272-274.
23. Эронов Ё. К., Ражабов А. А. ESTIMATING THE PREVALENCE OF CARIES IN CHILDREN WITH CEREBRAL PALSY //Новый день в медицине. – 2020. – №. 2. – С. 634-635.
24. Eronov Y. Q., Mirsalixova F. L. TREATMENT OF CHRONIC CATARRHAL GINGIVITIS IN CHILDREN WITH DISABILITIES IMPROVEMENT //World Bulletin of Social Sciences. – 2021. – Т. 3. – №. 10. – С. 71-74.
25. Eronov Y. Q., Mirsalixova F. L. DIAGNOSIS, PROPHYLAXIS AND TREATMENT OF CHRONIC CATARRHAL GINGIVITIS IN CHILDREN WITH DISABILITIES IMPROVEMENT //World Bulletin of Social Sciences. – 2021. – Т. 3. – №. 10. – С. 67-70.
26. Eronov Y. Q., Mirsalixova F. L. Dynamics of the prevalence of diabetes and the study of dental status in children of the bukhara region //International Journal of Applied Research. – 2019. – Т. 5. – С. 151.
27. Eronov Y. K., Mirsalikhova F. L. Indications for the comprehensive prevention and treatment of dental caries in children with cerebral palsy //Annals of the Romanian Society for Cell Biology. – 2021. – Т. 25. – №. 1. – С. 5705-5713.
28. Eronov Y. Q., Kamalova M. Q. Evaluation of caries prevalence in children with cerebral palsy //Academicia: an international multidisciplinary research journal. – 2020. – Т. 10. – С. 85-87.
29. Эронов Ё., Мирсалихова Ф. ИМКОНИЯТИ ЧЕКЛАНГАН БОЛАЛАРДА СУРИНКАЛИ КАТАРАЛ ГИНГИВИТЛАРНИ ЗАМОНАВИЙ ДАВОЛАШ УСУЛЛАРИ //Медицина и инновации. – 2021. – Т. 1. – №. 4. – С. 681-685.
30. Ражабов О.А., Хайитова М.А. Клинические изменения полости рта при использовании металлокерамических зубных протезов //Tibbiyotda yangi kun. - Бухоро, 2020.- №1(29)- С.322-324. (14.00.00; №22)
31. Razhabov O.A. Clinical and functional changes in the oral cavity using ceramic metal dentures //Academicia An International Multidisciplinary Research Journal .- Индия, 2020.-Vol. 10.- P. 209-215.(14.00.00; (23) SJIF - 7.13).
32. Ражабов О.А. Заболевания слизистой оболочки полости рта, обусловленные металлокерамическими и цирконными зубными протезами //Tibbiyotda yangi kun.-Бухоро, 2020.- № 4(33).-С.106-113. (14.00.00; №22)
33. R.O Asrorovich., A.Shodiyeovich Comparative assessment of structural and functional changes in periodontal tissues during prosthetics with metal- ceramic and zirconium dentures //European Journal of molecular & Clinical Medicine”-Англия, 2020.-Volume 7, Issue 7.-P.583-594. (14.00.00,(3) Scopus)

34. Ражабов О.А., Иноятов А.Ш., Ирсалиева Ф.Х. Клинико-Функциональные изменения полости рта при использовании металлокерамических зубных протезов //Stomatologiya. Тошкент, 2020.- № 2(2).-С.56-59. (14.00.00; №12)
35. Rajabov O.A. The State of Immune Homeostasis of the Mucosa in Prosthetics with Metaloceramic and Zirconic Dental Prosthesis. //Central Asian journal of medical and natural sciences.-Испания-2021.-P.367-377.