International Journal of
Health Systems and Medical Science

ISSN: 2833-7433
Volume 1 | No 4 | Oct-2022

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

Xojiev X. X. [1]

[1] Bukhara State Medical Institute

Relevance. Methods of filling root canals with "one paste" and resorcinol-formalin method in poorly passable root canals do not guarantee their high-quality obturation and can lead to the development of periapical foci of chronic infection. This underlines the importance of high-quality endodontic treatment, which allows to prevent microbial contamination and the impact of their waste products on the surrounding tissues. Destructive forms of chronic apical periodontitis pose the greatest potential danger to the human body, since prolonged inflammation of periodontal tissues is the most common cause of tooth loss and the formation of foci of odontogenic infection, which can lead to the occurrence of inflammatory diseases of the maxillofacial region.

Objects of research out of 36 examined patients for the period 2019-2021 in the scientific and practical dental center at the Bukhara State Medical Institute, 21 patients with granulating and granulomatous forms of chronic apical periodontitis were identified.

The subject of the study. For the clinical study, patients aged 18 to 55 years with granulating and granulomatous forms of chronic apical periodontitis were taken. For bacteriological research, quantitative sectoral seeding was carried out on media.

As a result of the conducted studies, new data will be obtained on the effect of copper-calcium hydroxide depoforesis, apex– foresis using a silver-copper conductor both individually and in combination with the method of fluctuation on microbial contamination and clinical and radiological condition of periodontal tissues in patients with chronic apical periodontitis with impenetrable root canals of teeth.

For the first time, the high antibacterial and anti–inflammatory effectiveness of the separate use of these techniques will be revealed in comparison with the traditional method of treating the disease, and even high efficiency - with their combined use.

The effect of combined endodontic treatment with the use of depot-, apex – foresis with the combined use of the method of fluctuation on the effectiveness of traditional treatment of periodontitis will be established, based on an assessment of the number of complications and the process of bone regeneration in the area of apical periodontitis.

The expediency of complex endodontic treatment of chronic apical periodontitis with the use of new methods of copper-calcium hydroxide depoforesis, apex– foresis using a silver-copper conductor and the joint application of the method of fluctuation will be proved.

The problem of treatment of chronic apical periodontitis is one of the important, not fully solved and promising tasks of therapeutic dentistry. In the treatment of destructive forms of periodontitis, accumulated clinical experience makes it necessary to optimize the reparative regeneration of the periodontium and bone tissue of the alveolar arches of the jaws to achieve a stable positive result of treatment [2.4.6.8.10.12.14.16.18].

It is important to include physical factors in the complex endodontic treatment of CVP, which allow to actively influence the main links in the pathogenesis of the periapical pathological process, the elimination of inflammatory and destructive foci and tissue regeneration.

One of these is the combined treatment with copper-calcium hydroxide depophoresis, apex-foresis using a silver-copper conductor and the method of fluoridation.

Therefore, we have set ourselves the goal of increasing the effectiveness of the treatment of chronic apical periodontitis by improving the endodontic treatment of the disease with separate and combined use of new methods of depot and apex - foresis with joint.

For the first time, the high antibacterial and anti–inflammatory effectiveness of the separate use of these techniques was revealed in comparison with the traditional method of treating the disease, and even high efficiency - with their combined use. It has been established that combined endodontic treatment with the use of depot-, apex – foresis with the combined use of the method of fluctuation increases the effectiveness of traditional treatment of periodontitis, which is expressed in reducing the number of complications and accelerating the process of bone regeneration in the area of apical periodontitis. This effect may be due to the fact that these techniques contribute to the purification of the root canal system from pulp residues, endodontic sterilization and obturation of branches from the macrochannel. In addition, depot-, apex – forez with the joint application of the method of fluoridation provide an opportunity to reduce the number of visits of patients to a dental institution. Of course, the implementation of such a technique requires considerable time, however, from our point of view, they are fully justified by the final result. This is especially important in the treatment of periodontitis with difficult-to-pass curved root canals of teeth, when they are used as supports for orthopedic structures, especially expensive ones. In connection with the above, it has been established that the immediate and long-term results of endodontic treatment of periodontitis using depot–, apex - foresis with the joint application of the method of fluctuation in our modification can be evaluated as positive and recommend the method for practical use.

The practical value of the work consists in the fact that the expediency of complex endodontic treatment of chronic apical periodontitis with the use of new combined methods of copper-calcium hydroxide depophoresis, apex– foresis using a silver-copper conductor with the joint application of the method of fluoridation has been proved. A unified scheme of application has been developed and medical tactics has been substantiated in the complex endodontic treatment of chronic apical periodontitis using depot-, apex – foresis with the joint application of the method of fluctuation [1.3.5.7.9.11.13.15.17].

The proposed improved method of treatment of chronic apical periodontitis makes it possible to improve the quality and effectiveness of treatment, reduce the number of complications in the near future after filling the tooth canals and obtain favorable clinical and radiological results in a timely manner. When using depot-, apex – foresis with the combined use of the method of fluctuation, it is possible to increase the effectiveness of conservative endodontic treatment of CVP in the conditions of outpatient dental reception of general practice.

The results of the work have been introduced into the practice of dental clinics of the republic and are used in the educational process of the Faculty of Dentistry of the Bukhara State Medical Institute when giving lectures and conducting practical classes with students.

As the results of microbiological studies have shown, the diversity of the microbial landscape in the form of obligate and facultative anaerobic bacteria was revealed in the material taken before the start of various types of treatment from the root canals of teeth. Streptococci and staphylococci were most often found in the studied material: Str.sanguis – in 52% of patients, Str.mutans – in 68%, Str.salivarius – in 52%, St.epidermidis – in 41%. In addition, 38% of patients had Peptostreptococcus anaerobius in the root canals, 12% had Clostridium spp, and 14% of fungi of the genus had no pattern of Candida albicans bone beams in the rarefaction area.

The study of strains of anaerobic bacteria obtained from the root canals of teeth before treatment showed (Table 3.1) that with traditional therapy of chronic apical periodontitis, all strains of

facultative anaerobic bacteria had growth retardation zones of less than 5.1 (3.7-5.0 mm), and with depoforesis with copper-calcium hydroxide at a current strength of 1.5 mA x min – 4.9 (3.5-4.8 mm). In accordance with the existing criteria for assessing antibacterial activity, such values of inhibition of the growth of test cultures can be regarded as a weak antibacterial effect of traditional treatment and depoforesis at a dose of 1.5 mA x min.

In cases where the amount of electricity during depoforesis was 2.5 mA x min, the diameter of the growth retardation zones corresponded to a moderately pronounced antibacterial effect (growth retardation zones – 6.8-9.3 mm). The most pronounced antibacterial effect appeared in cases when the dose of depophoresis was 5 mA x min - the diameter of the zones of growth delays of colonies of all studied bacteria was more than 15.1 mm (15.1-21.8 mm). Therefore, the optimal doses of depophoresis that have an antibacterial effect are 2.5-5 mA x min.

In the treatment of chronic apical periodontitis with apex-foresis using a silver-copper electrode, the growth retardation zones of all strains of facultative anaerobic bacteria studied were 5.1 mm (3.9-5.0 mm), at a dose of 1.5 mA x min, which is regarded as a weak antibacterial effect of this dose of apex-foresis [20.21.22.23.24.25].

While the current increases during the procedure to 2.5 mA x min, the diameter of the growth retardation zones is 8.6-9.6 mm, which corresponds to a moderately pronounced antibacterial effect. The most pronounced antibacterial effect was detected at a dose of apex-foresis of 5 mA x min, that is, the diameter of the growth delay zones of the colonies of the studied bacteria was more than 15.4 mm (15.4-22.4 mm).

Thus, the optimal doses of apex-forez, which have an antibacterial effect, are also 2.5-5 mA x min.

In the combined endodontic treatment of chronic apical periodontitis with the use of depot-, apex - foresis with the combined use of the method of fluoridation, an even more pronounced antibacterial effect is observed than using them separately. Thus, the diameter of the growth retardation zones of the strains of the studied anaerobic bacteria with the combined use of de-o-,apex - foresis with the combined use of fluoridation is on average 20.4 mm (17.8-24.5 mm), which has an antibacterial effect 4.8 times more than traditional treatment (respectively 4.2 mm), 1.6 times more, than depoforez (respectively 12.8 mm) and 1.5 times more than apex-forez (respectively 13.2 mm).

Thus, the combined endodontic treatment of chronic apical periodontitis with the use of copper-calcium hydroxide depophoresis, silver-copper electrode apex-foresis with the combined use of the method of fluoridation has the most pronounced antibacterial effect than the use of these methods of treatment separately.

It should be noted that the detection of only one form of the bacterium (multiple infection) in the root canals of teeth was observed only in 6 (7.4%) persons with chronic granulating periodontitis out of 81 examined, in most cases (92.6%) associations of pathogens were observed, including from 2 to 6 types of microbes. For example, the largest range of microflora was isolated from the material obtained from patients with chronic granulating periodontitis, and monoinfection was not found at all in patients with chronic granulomatous periodontitis. In all forms of the disease, Streptococcus and Candida fungi were present in patients before treatment, with streptococcal microflora dominating the associations[22.24.25].

When comparing the data on the quantitative and qualitative composition of the microflora of the root canals of teeth after therapy with various types of endodontic exposure, a significant decrease in the amount of microflora was noted, depending on the type of treatment used.

In patients with chronic apical periodontitis who received traditional treatment, the contamination of the root canal, although it tends to decrease, but in most cases it has no significant differences ($P>0.05$).

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 up to 2.8-6.3 Lg KOE/ml, that is, almost

2 times. At the same time, complete decontamination (there was no growth of microbes) was observed in 57.8% of cases, in the rest - the contamination significantly (P<0.05-0.01) decreased.

Endodontic dental treatment with apex-foresis using a silver-copper conductor led to a significant (P<0.05-0.01) 3.3% decrease in all types of microflora from 7.5-12.1 Lg KOE/ml to 1.9-4.1 Lg KOE/ml, especially this is clearly seen in relation to Str.sanguis, Str.mutans, Str.salivarius and Clostridium spp. Complete decontamination was observed in 66.8% of patients. In other words, the treatment of chronic apical periodontitis with the use of apex-foresis has 1.3 times more antibacterial effect than root canal depoforesis.

With the combined use of depot-. apex - foresis with the combined use of the method of fluoridation, a significant (P<0.001) decrease in the amount of microflora of the root canal of teeth was noted than depoforesis (2.5 times) and apex-foresis (1.5 times). At the same time, in most cases (71.5%), complete disappearance of St.epidermidis, Str.sanguis, Peptostreptococcus anaerobius, Clostridium spp. and Candida albicans was observed.

Thus, the data obtained confirmed the antibacterial efficacy of new methods of treatment of copper-calcium hydroxide depophoresis and silver-copper conductor apex-foresis against facultative anaerobic microbes, both most common in periodontitis and having significant resistance to antimicrobial effects. At the same time, the most pronounced (1.5-2.5 times more) the combined use of depot-, apex – foresis with the combined use of the method of fluoridation has an antibacterial effect than their use separately.

Analysis of the results of treatment of chronic apical periodontitis with the use of various types of therapy showed that 6 (28.5%) patients who received traditional treatment had complications in the form of pain and gum hyperemia in the area of the mine tooth on day 7-14. And when using depoforesis of the root canal of the teeth, similar complications were observed in 2 (10%) patients, with apex-foresis - in 1 (5.5%) patients, and with the combined use of depot-, apex- foresis with the combined use of the method of fluoridation, complications were not observed at all. When complications were detected, patients were prescribed analgesics and anti-inflammatory drugs (analgin, aspirin, paracetamol).

As the results of repeated X-ray examinations showed after 6 and 12 months, with traditional treatment, the number of positive X-ray pictures is 6 (28.5%) cases for 6 months and 4 (19%) cases for 12 months of the study. With depoforesis , these indicators are respectively equal to 8(40%), 9(45%) cases, and with apex-foresis – 12 (66.6%) and 15 (83.3%) and they significantly (P<0.05-0.001) differ from traditional treatment. With the combined use of depot, apex – foresis with the combined use of the fluoridation method, a positive X-ray picture was revealed after 6 and 12 months, respectively, in 20 (90.9%) and 22 (100%) cases. These indicators are 1.3-2.2 times higher than similar data when using depot- and apex- forez separately.

Analysis and comparison of the results of radiological studies in the long term (6 and 12 months), depending on the type of treatment used, showed that the positive dynamics of radiological data corresponding to a decrease in observations evaluated by 4 and 5 points of the modified PAJ index occurred in 4 (19%) patients with traditional treatment, in 16 (80%) - with depoforesis, in 15 (83.3%) - with apex-foresis and in 22 (100%) - with combined treatment with depot-, apex – foresis with the combined use of the method of fluoridation.

After 6-12 months after the end of combined treatment with depot-, apex – foresis with the joint use of the method of fluoridation, all patients had no complaints and when examined, the gum in the area of the cured teeth had a normal picture. Pathological periapical changes were not observed on the X-rays of the cured teeth.

Thus, the use of depot- and apex - foresis in the complex endodontic treatment of chronic apical periodontitis leads to a significantly (P<0.05-0.001) rapid acceleration of the processes of regeneration of periapical tissues compared with the traditional method of treatment. At the same time, the combined use of depot-, apex - foresis with the combined use of the method of fluoridation has a 1.3-2.2 times effective effect on the condition of the periapical tissue of the teeth than using

them separately. This is expressed in reducing the number of complications, accelerating the process of bone regeneration in the area of apical periodontitis and thereby reducing the number of visits of patients to a dental institution.

Based on our own research, we recommend the following ways to improve the quality of complex endodontic treatment of chronic apical periodontitis with difficult and impassable root canals of teeth.

So, it's no secret that, despite the undoubted successes achieved by domestic therapeutic dentistry, the quality of endodontic treatment in some cases remains unsatisfactory.

At the same time, foci of acute and chronic inflammation in the pulp and periodontium cause physical and moral inconvenience to the patient, can serve as a source of development of odontogenic inflammatory processes of the maxillofacial region and neck, can complicate the course of diseases of internal organs and systems, provoke the development of focal-conditioned (general somatic) diseases. Therefore, timely, adequate and effective endodontic treatment is one of the most important areas of work of a dentist-therapist.

In this work, we want to offer practical healthcare a number of measures that, in our opinion, will significantly improve the quality of endodontic care.

Firstly, we believe that in conditions of insufficient funding, it is advisable to organize a specialized endodontic reception in budget dental clinics with the use of physical factors affecting root canals.

1. The use of copper-calcium hydroxide depophoresis and apex-foresis of the silver-copper conductor of the root canal of teeth in the complex endodontic treatment of chronic apical periodontitis leads to a 2.0-3.3 one-time better reduction of facultative anaerobic bacteria than traditional treatment. At the same time, the most pronounced (1.5-2.5 times more) the combined use of depot-, apex – foresis with the combined use of the method of fluoridation has an antibacterial effect, rather than using them separately.

2. The use of depot- and apex- foresis in the treatment of chronic apical periodontitis leads to a significantly ($P<0.05$-0.001) rapid acceleration of the processes of regeneration of periapical tissues compared with traditional methods of treatment of the disease. At the same time, the combined use of depot-, apex – foresis with the combined use of fluoridation has a 1.3-2.2 times effective effect on the condition of the periapical tissue of the teeth than using them separately. It is expressed in reducing the number of complications, accelerating the process of bone regeneration in the apical periodontal region and thereby reducing the number of visits of patients to a dental institution.

USED LITERATURE

1. Ражабов О.А., Хайитова М.А. Клинические изменения полости рта при использование металлокерамических зубных протезов //Tibbiyotda yangi kun. - Бухоро, 2020.- №1(29)-С.322-324. (14.00.00; №22)
2. Razhabov O.A. Clinical and functional changes in the oral cavity using ceramic metal dentures //ACADEMICIA An International Multidisciplinary Research Journal, Vol. 10 Issue 2, February 2020.- Impact Factor: SJIF 2020 = 7.13 P. 209-215.
3. Ражабов О.А. Заболевания слизистой оболочки полости рта,обусловленные метолокерамическими и цирконными зубными протезами //Tibbiyotda yangi kun.-Бухоро, 2020.- № 4(33).-С.106-113. (14.00.00; №22)
4. R.O Asrorovich., A.Shodiyevich Comparative assessment of structural and functional changes in periodontal tissues during prosthetics with metal- ceramic and zirconium dentures //European Journal of molecular &Clinical Medicine" Volume 07, Issue 07, 2020.-P.583-594. (Scopus)
5. 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)

6. Rajabov O.A. The State of Immune Homeostasis of the Mucosa in Prosthics with Metaloceramic and Zirconic Dental Prosthesis. //Central Asian journal of medical and natural sciences 2021.-P.367-377.
7. Otabek Rajabov, Zaynitdin Kamalov, Husnitdin Irsaliev, Fatima Irsalieva. (2021). Comparative Assessment of the Cytokine Profile in Dynamics in Patients with Orthopedic Constructions from Different Construction Materials. //*Annals of the Romanian Society for Cell Biology*, Vol. 25, Issue 4, 2021, Pages. 3197 – 3202. (Scopus)
8. Ражабов О.А. Металлокерамика ва циркон протезлардан фойдаланилганда оғиз бўшлиғидаги клиник функционал ўзгаришларнинг диагностик таҳлиллари. //Проблемы биологии и медицины Научный журнал по теоретическим и практическим проблемам биологии и медицины 2021.-№ 4 (129) (14.00.00; №19)
9. О.А.Ражабов "Сравнительная оценка цитокинового профиля в динамике у пациентов с металлокерамическими и цирконными зубными протезами"//Проблемы биологии и медицины Научный журнал по теоретическим и практическим проблемам биологии и медицины" № 5 (130) 2021г. (14.00.00; №19)
10. O.A Rajabov., A.S Inoyatov., S.S. Sobirov. Comparative assessment of structural and functional changes in periodontal tissues during prosthetics with metal-ceramic and zirconium dentures //International Journal of Progressive and Technologies 22 (2) 2020. -P.19-28.
11. Khabibova N.N. Characteristic features of free-radical processes and antioxidant protection in the oral cavity during chronic recurrent aphthous stomatitis // European Science Review. - 9-10 2018. - P. 191-193 (14.00.00; № 6).
12. Khabibova N.N. Changes in biochemical and immunological indicators mixed saliva of patients with chronic recurrent aphthous stomatitis // European journal of pharmaceutical and medical research – 2018. – (5)11 – P. 143-145. Impact Factor – 4,897.
13. Хабибова Н.Н. Клинико-биохимические особенности течения псевдоаллергических вариантов хронического рецидивирующего афтозного стоматита // Проблемы биологии и медицины. – 2018. - № 4(104) – С. 220-222. (14.00.00; № 19)
14. Хабибова Н.Н., Саидов А.А., Саидова М.Р. Сурункали рецидивирловчи афтозли стоматитда липидларни перекис оксидланишини ўзига хос хусусиятлари ва оғиз бўшлиғи тантиоксидант ҳимоясининг ҳолати // Тиббиётда янги кун. - №3 (23). – 2018. – С.61-63. (14.00.00; № 22)
15. Хабибова Н.Н., Ахмадалиев Н.Н. Оценка защитной системы слизистой оболочки ротовой полости при хроническом рецидивирующем афтозном стоматите // Вестник ТМА. – 2019. - №3. – С.131-133 (14.00.00; № 13).
16. Хабибова Н.Н., Хабилов Н.Л. Роль адгезивных молекул в развитие афтозного стоматита // Stomatologiya. – Ташкент, 2019. - №3. – С.32-36 (14.00.00; № 12).
17. Khabibova N.N. Clinical characteristics of patients with recurrent aphthous stomatitis // Annals of international medical and dental research. – 2019. – Vol.5, Issue 5. - P. 64-66. Impact factor – 0,676
18. Хабибова Н.Н., Хабилов Н.Л. Оценка сосудисто-тканевых расстройств и регионарного кровотока при хроническим рецидивирующим афтозном стоматите // Тиббиётда янги кун. - 2019. - 3(27). – С.262-266 (14.00.00; № 22).
19. Khabibova N.N., Khadjimetov A.A. Some occurrence aspects of chronic recurrent aphthous stomatitis of the oral cavity // Global Journal of Medical, Physical and Health Education. – 2019. - Vol. 7 (3). - P. 284-286. Impact factor – 0,676.
20. Khabibova N.N. Characteristic features of the biochemical indicators of mixed saliva in patients with chronic recurrent aphtosis stomatitis // Global Science Research Journals. - 2019. - Vol.7 (8). – P.521-526. Impact factor – 6,396.

21. Kh.Kh. Khozhiev Estimation of the effectiveness of application of the combined method of treatment of chronic uppercular periodontitis // World Bulletin of Social Sciences (WBSS) Available Online at: https://www.scholarexpress.net Vol. 3, October- 2021ISSN: 2749-361X. – P.90-96
22. H. H. Hojiev, N.N.Xabibova "Microbiological evaluation of the effectiveness of depot, apex of fluctuorization and electrophoresis in complex treatment of chronic apical periodontitis". // Middle European Scientific Bulletin, VOLUME 4, SEPTEMBER 2020 – P. 21-25
23. H. H. Hojiev, N.N.Xabibova Improving endodontic treatment of chronic apical periodontitis with the use of depo of ipexpress and physiotherapy method of fluctuorization // International Journal on Integrated Education Volume 3, Issue IX, September 2020 – P. 224-228
24. H. H. Hojiev Effects of Treatment of Chronic Apical Periodontitis with the use of Depot-, Apex – Foresis With A Combined Method of Fluctuation // Middle European Scientific Bulletin,Volume 27, August 2022 – P. 34-36
25. Xojiev X. X. Improvement of Endodontic Treatment Methods for Chronic Periodontitis // Web of Scholars: Multidimensional Research Journal (MRJ) Volume: 01 Issue: 04 | 2022 ISNN: (2751-7543) http://innosci.org/ – P 94-98