

Improvement Of Endodontic Treatment Of Chronic Upper Periodontitis Using Depo-, Apexphoresis And Physiotherapeutic Method Of Fluctuorization

Khurshid Kh. Khojiev¹, Nazira N. Khabibova²

¹ Assistant of the Department of Therapeutic Dentistry of Bukhara State Medical Institute named after Abu Ali ibn Sino, Uzbekistan, ORCID: <https://orcid.org/0000-0002-7581-0775>
² Head of the Department of Therapeutic Dentistry of Bukhara State Medical Institute named after Abu Ali ibn Sino, Uzbekistan, ORCID: <https://orcid.org/0000-0002-0900-3828>

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1. INTRODUCTION

In recent years, there have been positive trends in our country in increasing the effectiveness of endodontic dental treatment in connection with the introduction of modern technologies that allow predicting the results of dental treatment.

However, in clinical practice, the number of failed treatment outcomes for caries complications has not decreased. It is known that the key to the effectiveness of endodontic treatment is the "three pillars": cleaning, sterilization and obturation of the root canal system. However, at every stage of endodontic treatment, a significant number of errors are obtained. So, according to the data of X-ray examination, it was found that only in 13.4% of cases the root canals were filled satisfactorily. But even with high-quality obturation, inflammation in the periodontium is observed in 5-8% of cases.

The main mistakes that occur during endodontic treatment are:

- perforation of the tooth;
- breaking off an endodontic instrument or a post in the root canal;
- poor quality passage and expansion of the root canal;
- Poor quality filling (obturation) of the root canal.

Errors of endodontic treatment can also be made at the diagnostic stage. The appearance of diagnostic errors is associated, among other things, with an insufficient frequency of X-ray examination.

According to literature data, in private clinics, a diagnostic X-ray for dental pulp inflammation is performed in 19% of cases, and in municipal institutions - only in 8%. According to the X-ray image, even before the start of treatment, the dentist can reveal the number and configuration of the roots of the tooth, the location of the root canals, their length, shape, and the degree of deposition of reparative dentin. In the process of endodontic treatment, the doctor, using X-ray examination, controls the working length and the degree of mechanical processing of the root canals, and also determines the quality of obturation and long-term results of treatment. However, it is important to observe the safety regime for the patient, and in order to avoid unnecessary irradiation, the electrometric method using an apex locator should be used at certain stages of treatment. The main condition for achieving

positive results in endodontic treatment is the formation of the correct access to the root canal. It should be remembered that "access is the fate of endodontics".

It has been established that the use of a 1% solution of chlorophyll lipt in the treatment of destructive forms of CVP is effective against streptococci and staphylococci. Most of the works devoted to the treatment of chronic periodontitis analyze the response of periapical tissues depending on the filling material, with an emphasis on the antiseptic properties of these materials, as well as their ability to stimulate tissue regeneration. It is believed that the healing pastes, which are removed from the apex, are most conducive to the regeneration of the periodontal. At the same time, the conclusion about the stimulating effect of supra-apical therapy on bone tissue regeneration is based on the result of clinical and radiological studies, which is not a sufficiently objective criterion for assessing the state of the periodontium. Antiseptic treatment of root canals is one of the main components of endodontic treatment of periodontal diseases. The microflora located in the root canals not only causes and maintains inflammatory processes in the periodontal tissues, but is also a hotbed of chronic infection for the whole organism. Practical doctors do not always take into account the etiopathological factors of periodontitis, and the empirical and unjustified prescription of antibacterial drugs to patients is often the cause of the appearance of resistant strains and microbes. As a result, there is an ineffectiveness of the therapy and a change in the composition of the microflora of the root canals, the involvement of other microorganisms that were not previously characteristic of this process in the infectious process. The use of copper-calcium hydroxide depopohoresis is shown primarily in endodontic treatment of teeth with impassable root canals. In addition, this method is recommended for use in cases of severe infection of the canal contents, fracture of the instrument in the canal lumen (without going beyond the apex), in case of unsuccessful dental treatment with "traditional" methods, in the presence of a wide apical opening.

Along with this, depopohoresis is recommended to be used with the method of vital extirpation of the pulp (a special rather laborious technique is required). The recommendation to use depopohoresis for retreatment of teeth previously treated with the resorcinol-formalin method, in our opinion, is controversial and requires additional study. This is due to the fact that, as you know, the resorcinol-formalin mixture does not conduct electric current, therefore, full impregnation of the apical part of the canal with copper-calcium hydroxide during depopohoresis, that is, under the action of an electric current, is hardly possible.

Contraindications to depopohoresis are: malignant neoplasms, severe forms of autoimmune diseases, pregnancy, electric current intolerance, an allergic reaction to copper, as well as exacerbation of chronic periodontitis, a festering jaw cyst and the presence of a silver pin in the canal. It should be remembered that before depopohoresis, the pulp in the canal must be devitalized. It should also be noted that depopohoresis is a medical manipulation, and it is performed not in a physiotherapy room, but by a dentist directly in a chair. Thus, based on the analysis of the available data of the modern literature on endodontics, the following conclusions can be drawn:

1. The problem of treatment of chronic apical periodontitis is one of the important, not fully solved and promising problems of therapeutic dentistry.
2. In the treatment of destructive forms of periodontitis, the accumulated clinical experience determines the need to optimize the reparative regeneration of the periodontal and bone tissue of the alveolar arches of the jaws in order to achieve a stable positive treatment result.
3. Of great importance is the inclusion of physical factors in the complex endodontic treatment of CVP, which make it possible to actively influence the main links of the

pathogenesis of the periapical pathological process, the elimination of the inflammatory-destructive focus and tissue regeneration.

2. PURPOSE OF THE STUDY

Increasing the effectiveness of the treatment of chronic apical periodontitis by improving the endodontic treatment of the disease with the separate and combined use of new methods of depot and apex - phoresis with the combined use of fluctuorization.

3. MATERIALS AND RESEARCH METHODS

Examination and treatment of 81 patients aged 18 to 55 years with granulating and granulomatous forms of chronic apical periodontitis (in 108 multi-rooted teeth) were carried out.

The distribution of examined patients by type of endodontic dental treatment is presented in Table 1.

All patients, regardless of the type of endodontic treatment used, twice before and at the end of the course of treatment underwent bacteriological examination of the contents of the root canals, X-ray examination of the periodontium and electroodontodiagnostics (EDI) from the mouths of the root canals.

The teeth of the first group of patients were treated in the traditional way, that is, endodontic treatment of the canals of the teeth was performed using the Crown-Down technique, the canals were washed with antiseptic - 1% chloramine solution, 2% sodium hypochlorite solution. The expansion of the apical foramen was carried out using a drill by turning it around the tooth axis by no more than 45°. The level of the apical foramen was determined using a root needle (inserted into the root canal until the patient felt a light prick and subjected to a control radiograph, followed by filling the patent root canals using cold and hot condensation methods of gutta-percha with sealers (without using depot and apex-phoresis). The resorcinol-formalin method was used for the teeth canals passed through the instrument. The teeth of the second group were treated with depophoresis using the "Original II" apparatus (Germany). The technique of copper-calcium hydroxide depophoresis was as follows. First, the carious cavity was prepared, the tooth cavity was opened and an endodontic access was created. It is believed that three depophoresis sessions with an interval of 8-14 days are enough to ensure a guaranteed, lasting effect. At the first visit, the root canals were passed and expanded by about 2/3 of the length, then washed with a suspension of copper-calcium hydroxide. The tooth was isolated from saliva and dried. In this case, the patient should be positioned so that the drug does not flow out of the canal. Then a suspension of copper-calcium hydroxide was introduced into the treated part of the canal using a canal filler. Then a negative needle electrode (cathode) was inserted into the canal to a depth of 4-8 mm, and the tooth cavity was closed with sticky wax. A positive passive electrode (anode) was placed behind the cheek from the opposite side through a cotton roll moistened with tap water.

The current was slowly increased until a slight warmth or tingling sensation appeared in the area of the tooth. Procedure time 10 minutes. After the end of the procedure, everything is removed, a copper-calcium hydroxide suspension is left in the canals and the tooth cavity is hermetically closed with an artificial dentin bandage. Then, with an interval of 7-14 days, 2 and 3 sessions of depoinphoresis were performed.

After the last procedure, the treated part of the canal (2/3 of the length) was filled with a special alkaline copper cement "Atazamit" included in the depophoresis set. On the same visit, a permanent seal was placed.

To carry out apex-phoresis, patients of the third group used a single-core silver-copper electrode in Teflon insulation, which was placed in a root canal, which was preliminarily expanded in patency (by 2/3 - 1/2 of the root length to the 20th file size), into a root canal moistened with saline. The silver-copper electrode served as the anode. The second electrode was placed on the forearm of the right hand. In the absence of periapical changes, 2 procedures per day were prescribed for 5 minutes, destructive forms of chronic apical periodontitis, the course of treatment consisted of 3 procedures, 5 minutes each, carried out daily. During treatment, the current strength during the procedures ranged from 1 to 0.5 mA. The amount of electricity for 1 procedure was 2.5-5 mA x min.

In the teeth of the fourth group of patients, after traditional instrumental and drug treatment of root canals, a depophoresis session was performed at a dose of 5 mA with copper-calcium hydroxide. Then, instead of the second depophoresis session (after 7 days), apex-phoresis was performed with a silver-copper conductor. An hour later, a second session of depophoresis was carried out at the same dose.

On the 14th day, apex-phoresis and depophoresis of the teeth were again performed. Ultimately, for the course of combined dental treatment, patients received 3 depophoresis sessions and 2 apex-phoresis sessions. After that, the patent canals of the teeth were immediately filled with the methods of cold and hot condensation of gutta-percha with sealers (AH-plus, cortisonol, Vident, etc.). Further, to prevent post-filling pains, the fluctuorization method was used. Two plate electrodes 3 x 4 cm in size were placed transversely on the jaw area, above the affected tooth - the cathode, the electrodes were fixed with a bandage. Affected by form II or III of medium intensity current. The duration of the procedure is 6-8 minutes daily. The course of treatment is 7-8 procedures.

The root canals, which had not been passed instrumentally, were filled with atatsamite within the limits of their passable part. Tooth crowns were restored using fillings and inlays.

Research results and discussions

The practical value of the work lies in the fact that the expediency of complex endodontic treatment of chronic apical periodontitis using new methods of copper-calcium hydroxide depophoresis and apex-phoresis using a silver-copper conductor has been proved. A unified scheme of application has been developed and medical tactics have been substantiated in the complex endodontic treatment of chronic apical periodontitis with the combined use of depot, apex-phoresis and the physiotherapeutic method of fluctuating.

The proposed improved method for the treatment of chronic apical periodontitis allows to improve the quality and effectiveness of treatment, to reduce the number of complications in the near future after filling the root canals and to obtain favorable clinical and radiological results in a separate period. With the combined use of depot, apex - phoresis and the physiotherapeutic method of fluctuating, it is possible to increase the effectiveness of conservative endodontic treatment of CVP in an outpatient dental clinic in general practice.

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 hyperemia of the gums in the area of the mine tooth on days 7-14. And with the use of depophoresis of the root canal of the teeth, similar complications were observed in 2 (10%) patients, with apex-phoresis - in 1 (5.5%) patients, and with the combined use of depophoresis, apex-phoresis and the physiotherapeutic method of fluctuating complications at all were observed.

When complications were detected, patients were prescribed analgesics and anti-inflammatory drugs (analgin, aspirin, paracetamol).

As the results of repeated X-ray examinations after 6 and 12 months have shown, with traditional treatment, the number of positive X-ray patterns is 6 (28.5%) cases at 6 months and 4 (19%) cases at 12 months of the study. With depophoresis, these indicators are, respectively, 8 (40%), 9 (45%) cases, and with apex phoresis - 12 (66.6%) and 15 (83.3%) and they are significant ($P < 0.05 - 0.001$) differ from traditional treatment.

With the combined use of depot, apex-phoresis and the physiotherapeutic method of fluctuorization after 6 and 12 months, a positive X-ray picture was revealed in 20 (90.9%) and 22 (100%) cases, respectively. These indicators are 1.3-2.2 times higher than the analogous data when using depot and apex - phoresis separately.

Analysis and comparison of the results of X-ray studies in long-term periods (6 and 12 months), depending on the type of treatment used, showed that the positive dynamics of X-ray data corresponding to a decrease in observations, assessed by 4 and 5 points of the modified PAJ index, took place in 4 (19%) patients with traditional treatment, in 16 (80%) - with depophoresis, in 15 (83.3%) - with apex-phoresis and in 22 (100%) - with combined treatment with depot, apex - phoresis and the physiotherapeutic method of fluctuorization. 6-12 months after the end of the combined treatment with depot, apex - phoresis and physiotherapeutic method of fluctuating in all patients there were no complaints and when examining the gums in the area of the treated teeth had a normal picture. On radiographs of the cured teeth, pathological periapical changes were not observed.

Thus, the use of depot and apex - phoresis in the complex endodontic treatment of chronic apical periodontitis leads to a significant ($P < 0.05 - 0.001$) rapid acceleration of the regeneration processes of periapical tissues in comparison with the traditional method of treatment.

At the same time, the combined use of depot, apex - phoresis and the physiotherapeutic method of fluctuation has an effective effect on the state of the periapical tissue of teeth by 1.3-2.2 times than using them separately. This is reflected in a decrease in the number of complications, acceleration of the process of bone tissue regeneration in the area of apical periodontitis, and thus a decrease in the number of patients' visits to the 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 the teeth.

So, it is not a secret for anyone that, despite the undoubted success 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-caused (somatic) diseases. Therefore, timely, adequate and effective endodontic treatment is one of the most important areas of work of a dentist-therapist.

The results of the work were introduced into the practice of dental clinics of the republic and are used in the educational process of the dental faculty of the Bukhara State Medical Institute when giving lectures and conducting practical exercises with students.

4. CONCLUSIONS

1. The use of depopphoresis of copper-calcium hydroxide and apex-phoresis of the silver-copper conductor of the root canal of teeth in the complex endodontic treatment of chronic apical periodontitis results in 2.0-3.3 times better reduction of facultative anaerobic bacteria than traditional treatment. At the same time, the most pronounced (1.5-2.5 times more) antibacterial effect is possessed by the combined use of depot, apex - phoresis and the physiotherapeutic method of fluctuorization than their use separately.
2. The use of depot and apex - phoresis in the treatment of chronic apical periodontitis leads to a significant ($P < 0.05-0.001$) rapid acceleration of the processes of regeneration of periapical tissues in comparison with traditional methods of treating the disease. At the same time, the combined use of depot, apex - phoresis and the physiotherapeutic method of fluctuorization has a 1.3-2.2 times effective effect on the state of the periapical tissue of the teeth than using them separately, which is expressed in a decrease in the number of complications, acceleration of the process of bone regeneration. tissue in the area of the apical periodontal and thereby reducing the number of visits to patients in the dental office.
3. It has been established that the immediate and long-term results of endodontic treatment of chronic apical periodontitis using depot, apex-phoresis and physiotherapeutic method of fluctuorization in our modification can be assessed as positive and their use in clinical dentistry can be recommended.

5. LITERATURE

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