



## Evaluation of the Clinical and Functional Efficiency of the "Aerodent" Device in the Prevention of Dental Caries in Children

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**Abstract:** Despite the use of various methods of prevention and treatment, dental caries remains one of the most common oral diseases in children and adults. It has been established that local antimicrobial therapy plays an important role in the selection of therapeutic agents that can influence the etiological factors of the disease, as well as in the treatment and prevention of dental caries in children. The article evaluates the clinical and functional effectiveness of the Aerodent device in the prevention of caries in children as a means of improving the mineralization of hard tissues and normalizing the microflora of the oral cavity. According to him, the results before treatment and 6 months after the start of taking Aerodent are the results of the main group and the comparison group. The results of treatment are based on the improvement of the results of the enamel resistance test in the main group by 1.44 times, the results of the test clinical evaluation of enamel remineralization rate by 1.31 times, and the electrical conductivity of the hard tissues of the teeth by 1.62 times.

**Keywords:** hard tissues of teeth, caries, prevention, enamel resistance test, test clinical evaluation of enamel remineralization rate, electrical conductivity.

**Introduction.** Currently, caries disease is considered a common chronic disease among children. Despite the use of various methods of prevention and treatment, dental caries, as before, remains one of the most common diseases of the oral cavity in children and adults. Experts say that there is caries in the tooth children indicate the presence of a large amount of cariesogenic microorganisms in the oral cavity. In this regard, it is established that local antimicrobial therapy plays an important role in the selection of therapeutic agents that can affect the etiological factor of the disease and the treatment and Prevention of dental caries in children. Children's dental caries disease is a serious health problem due to its prevalence and low effectiveness of treatment and preventive measures. Increasing the durability of dental hard tissue, restoring the normal structure of enamel, stabilizing the caries process requires local pathogenetic therapy, including remineralization and the use of fluorine preparations. The issues of using remineralization therapy and objective sermons have not been sufficiently developed. It is important to introduce and improve new methods of preventing caries, as well as identify promising ways to reduce this disease. In search of a clear way to carry out measures to treat and prevent the disease, a promising way to reduce its intensity, it is necessary to further develop and take a differential approach to the means and methods of preventing dental caries, as well as the need for scientific research in this regard [1.3.5.7.9.11.13.15].

**Purpose of the study** It consists in improving the Prevention of dental caries in children using the "Aerodent" device.

### Objectives of the study:

1. Determination of the dynamics of the intensity and activity of the course of carious lesions of teeth in groups of children from 6 to 15 years old;
2. Assessment of the clinical and functional characteristics of the specific course of caries of dental solid tissue in research groups.

**Object of research** there is a dental caries that appealed to the Bukhara regional pediatric dental clinic as 134 children aged 6 to 15 years participated. As a control group, 36 children with dental health were involved.

**Methods of research** as clinic-dental, clinic-functional and statistical methods of analysis were used. When dividing patients into groups, the variational method was used. For statistical analysis, the t – criterion of the Student's t, the abnormal distribution criterion of Mann-Whitney, and the Wilcoxon test for pair comparison were used.

**Research results:** The dynamics of the analysis of the incidence among children analysis of the intensity of caries in temporary teeth of 6-year-old children showed that the KPO index indicator showed a high result of reliable ( $p < 0.001$ ) the magnitude of the "K" component ( $2.94 \pm 0.09$ ), while the indicator showed  $4.78 \pm 0.19$ . While the "P" component showed  $1.48 \pm 0.09$ , at this age the "O" component ( $0.36 \pm 0.02$ ) was found to be reliably lower than other indicators. The prevalence of permanent tooth caries among children aged 6-9 years was found in 13% of common patients, while the incidence of KPO components was  $0.20 \pm 0.01$  and  $0.10 \pm 0.01$ , respectively. The "O" component was not observed. The value of KPO in children 10-12 years old ( $2.51 \pm 0.23$ ) the components "K" and "P" did not differ from reliable ( $1.17 \pm 0.08$  and  $1.30 \pm 0.09$ , respectively). The "O" component suffered at  $0.04 \pm 0.01$  degrees. In 12-15-year-olds, the CPO ( $3.81 \pm 0.15$ ) index and its "K" ( $1.57 \pm 0.10$ ) components were of average size ( $p < 0.05$ ), while the "P" component ( $2.15 \pm 0.08$ ) was higher in children ( $p < 0.05$ ). Component "O" observed  $0.09 \pm 0.01$ .

When the hygienic state of the oral cavity of those examined was analyzed, the main group of children up to the Fedorov-Volodkina index treatment showed an indicator of  $1.13 \pm 0.09$  points among children 6 years old (temporary teeth), while in children of the group in which the "Aerodent" was applied after treatment,  $1.03 \pm 0.02$ , in the group In the children of the control group, this showed an average of  $1.09 \pm 0.03$  points. The hygienic index up to treatment among 6-9 young children of the main group showed  $1.9 \pm 0.33$  points, in the control group- $1.6 \pm 0.21$  points and showed a satisfactory indicator. In children of the group where "Aerodent" was applied after treatment,  $1.39 \pm 0.23$ , in the group where the Borovsky-Leus method was used, this indicator was equal to  $1.66 \pm 0.18$  [2.4.6.8.10.12.14.16].

The lowest indicator of oral hygiene was observed among children of the main group of 10-12 years old, showing an average of  $2.2 \pm 0.45$  points, which is an unsatisfactory indicator. It was in the control group of this group that showed  $1.7 \pm 0.18$  points and a satisfactory indicator. We associate such a low hygienic condition in this age group with an exchange period bite. With improvements to  $1.76 \pm 0.45$  in patients of the group where "Aerodent" was used, the Borovsky-Leus method in the treatment was equal to  $1.87 \pm 0.21$  in the group used. In patients of the main group of children 13-15 years old, it was found that this indicator was equal to  $1.9 \pm 0.38$ , in the control group- $1.3 \pm 0.15$ . In the group where "Aerodent" was used in the treatment, it was found that it decreased to  $1.56 \pm 0.38$ , in the group where the Borovsky-Leus method was used, to  $1.68 \pm 0.13$ .

When the acid resistance of tooth enamel (sweat test) after 6 months of using the "Aerodent" device in children was analyzed, a significantly lower variation indicator on the sweat test was recorded among the comparison group ( $52.2 \pm 2.8\%$  and  $48.7 \pm 2.1\%$ , respectively). After the application of "Aerodent" to the patients of the main group, a sharp improvement in the results was seen. In this case, in the group of children 6 years (temporary teeth), this figure was up to  $41.7 \pm 1.9\%$ , in children 6-9 years (permanent teeth)  $42.3 \pm 3.2\%$ , and children 10-12 years old  $39.1 \pm 4.1\%$ . The best indicator of the acid resistance of tooth enamel was  $31.3 \pm 3.1\%$ , observed among children of the main group aged 13-15 years. The comparison group showed an average of  $42.3 \pm 1.5\%$  among children aged 6 years (temporary teeth), while among children aged 13-15 it was  $34.7 \pm 1.9\%$ . Also in children's age groups, a KOSRE test was studied, which reflects the time of enamel regeneration (remineralization). The results of the KOSRE test showed a direct strangeness of tooth enamel to the indicators of acid resistance. Through it, the validity of the results of the sweat test is justified. In this case, the lowest indicators of the period of remineralization were recorded with  $4.1 \pm 0.4$  days and  $3.6 \pm 0.2$  days respectively in the comparison group of 6-9 years (permanent teeth) and 10-12 years of

age children. It was in the main group of children of this age that  $3.9 \pm 0.1$  days and  $2.8 \pm 0.2$  days, respectively [17.19.20.21.22].

In the research groups, the best reduction indicators of electronegativity after 6 months after using the "Aerodent" device showed that all dental groups are in the neck area. This is justified by the fact that the tooth solid tissue of the "Aerodent" device also improved the mineralization process, and also led to the normalization of the microflora of the tooth-gum pocket.

Thus, studies after 6 months of using the "Aerodent" device carried out in children participating in the study revealed qualitative changes in the rigid structures of the tooth, which was expressed in a change in the level of their electric current transfer. When the degree of mineralization of dental solid tissue in examined children is studied, enamel remineralization in different bite periods is justified by an improvement in the indicators of sweat-testing, KOSRE-testing and electronegativity of dental solid tissues. This showed a reduction in the risk of primary damage with the help of an "Aerodent" device of dental solid tissue [16.17.18.19.20.21.22].

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