

Clinical-diagnostical characteristics of development of caries in children in orthodontic treatment with disclosed and restricted equipment

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ABSTRACT: From these positions, it seems promising to study diagnostic and therapeutic measures aimed at improving the quality indicators of orthodontic care for children. The development of the closest possible approach to the diagnosis and treatment of caries during orthodontic treatment in the early stages will help to obtain a stable aesthetic outcome in the treatment of orthodontic patients, and to avoid relapses. In modern orthodontic dentistry acute problem of prevention of dental caries and periodontal diseases, especially in children and adolescents who have not yet completed the process of mineralization of hard tissues: soon after teething create a situation of increased risk of tooth decay. The purpose of this paper is to analyze complex information about methods of prevention of dental caries in patients with removable and non-removable orthodontic appliances.

KEYWORDS: Orthodontics, dental caries, pediatric oral cavity, enamel, stomatitis

INTRODUCTION

Given the expressed correlation between the hygienic condition of the oral cavity and the development of dental caries and periodontal disease, the level of hygienic knowledge and skills was determined by questioning and assessing manual skills in all patients prior to orthodontic treatment. The analysis of the data obtained showed that the level of knowledge and manual skills in dental disease prevention was low.

Some authors suggest that primary carious lesions can be seen at a depth of less than 300 μ m. Recent studies confirm that clinical retention can be achieved within 15 s with a small loss of enamel, but this depends on the individual resistance of the enamel. 15 sec treatment is sufficient in patients. For

the teeth of patients with high resistance, 30 sec. acid exposure is sufficient. Adults with high resistance need 60 sec, and at low - exposure of the drug agent - 30 sec. [5, 8, 9].

In addition, the area of treatment should be limited to reduce the area of the treated enamel and to prevent the enamel from contact with the neck and contact surface of the tooth, where maximum solubility is observed. The enamel treatment zone should be the size of the fixing element, and the adhesive or silane used should retain the active compound of fluoride, which will create a buffer zone around the bracket for some time.

It is very important to remove the excess adhesive to reduce the accumulation of dental plaque around the bracket due to the roughness and micro-porosity of the adhesive after the bracket is installed using a roller or scalar.

Removal of the unfilled activator after fixation of the braces is an important procedure, as over time it becomes a stroma to form a rash. This can be done by using a cotton swab soaked in 70% ethyl alcohol (dental acetone) and rinsing several times with water. This is not necessary when using fluoride-containing orthodontic silanes (e.g., Ortho-Solo Ormco) [7, 10].

After fixing the equipment, remineralization of the treated areas of the enamel around the brackets (excluding the use of fluorine-containing adhesives and cements) was considered an important measure, which is carried out immediately after installation, then repeated every 3-6 months. The risk of developing furnace demineralization reduces the maximum elimination of the developing furnace [1, 5].

After all the measures listed above, the bow is tied. The orthodontic bow is placed in the bracket groove and fixed using a metal or elastic ligature. As shown in the figure, elastic ligatures accumulate dental plaque, so metal ligatures should be preferred [11].

The metal ligature is twisted by the occlusion or gum surface, then cut with a ligature cutter, leaving 2-3mm from the end, it is transferred from the cutting edge to the gum edge under the arc. Sharp ligature cutters should be used because the blunt tool breaks the twisted ends of the ligature. The same thing happens if the ends of the ligature are twisted under the bow from the edge of the gum to the cutting edge [12-14,].

During active orthodontic treatment, it is most important that the patient adheres to the rules of hygiene, eating habits and a rational diet.

Removal of the device is the final procedure of orthodontic treatment. This procedure is very simple and safe when certain rules and sequence of actions are followed. The use of a driving force that causes the adhesive layer to collapse is a prerequisite for removing the brackets. At the same time, violation of the technique of removing braces can lead to fracture of tooth enamel, cracking of enamel, dislocation of the tooth and fracture of the depulped tooth crown. Particular attention should be paid to the removal of adhesive residues and polishing of enamel. Rough application of polishing and grinding, as a result of overheating during grinding, the appearance of scratches, leads to traumatic pulpitis, hyperesthesia occurs [8, 9, 12-15].

The purpose of the study: to develop and implement a set of diagnostic and prophylactic measures aimed at preventing the development of caries and its complications in the orthodontic treatment of patients.

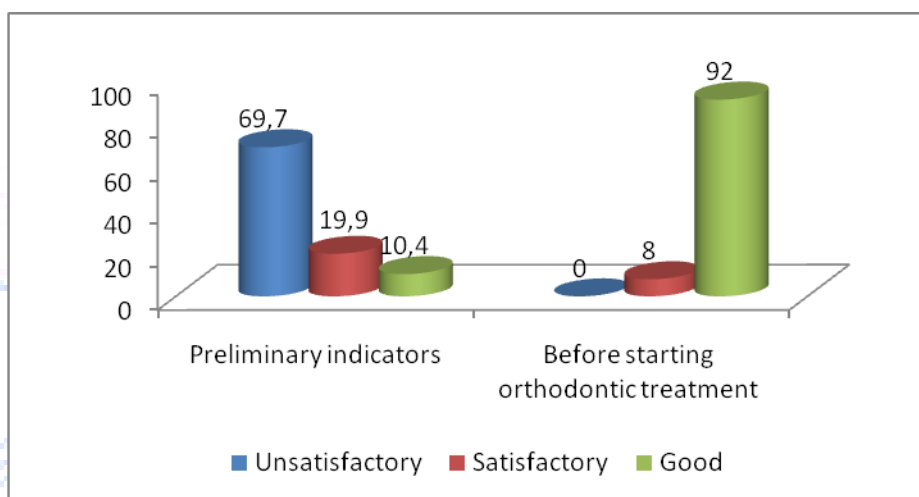
Materials and research methods. Knowledge and skills in oral hygiene were identified through a survey of children participating in the study. The quality of oral care skills was assessed according to a specially developed method. All patients underwent oral sanitation for 1-2 months before starting orthodontic treatment, diet was corrected, oral hygiene was taught, and regular hygienic care was provided using the recommended set of hygiene items. aroused interest.

Dental examinations were performed for 18 months at the following intervals: primary examination, 1, 3, 6, 9, 12, 15, and 18 months after the installation of the fixed orthodontic equipment.

Research results. Assessment of manual skills in oral care showed that only 10.4% of children showed proper brushing of teeth at a good price. Satisfactory manual skills in oral care were identified in 19% and unsatisfactory in 69.7% of children.

Given the low initial level of awareness of children and adolescents on oral hygiene and the high percentage of unsatisfactory manual skills, there was a need for training at all stages of orthodontic treatment, long-term motivational bleaching, and monthly monitoring. Oral hygiene and dental caries and given the direct correlation between periodontal tissue diseases, it should be noted that dental bleaching and occupational oral hygiene are important elements of a set of preventive measures. In doing so, not only are the techniques taught by adhering to the timing and duration of tooth cleaning, but the manual skills are reinforced with self-monitoring criteria in terms of feeling the smoothness of the teeth and the surface of the orthodontic apparatus.

Prior to initiating orthodontic treatment, a review of manual skills was conducted after training in professional oral hygiene and individual hygienic procedures (Figure 1).



Assess the quality of manual skills in patients before initiating orthodontic treatment

Dental cleaning of unsatisfactory quality was not recorded, satisfactory was detected in 8% of children, good - in 92% of children, which allows them to be considered ready for questions on oral hygiene for orthodontic treatment using soluble techniques.

In the initial assessment of oral hygiene on the OHI-S and RNR indices, it was found that oral hygiene was unsatisfactory in all groups in the study. The values of the indices decreased convincingly in all groups, but in the main groups the criteria for evaluating their values were different. If the hygienic condition of the oral cavity according to the OHI-S index did not exceed 0.7, the RNR was satisfactory on the hygiene index and was around 1.6.

By evaluating the informativeness of the index data, it is possible to note a reliable assessment of quality using the RNR index, which allows the detection of dental views in segments in the cervical and apical areas of the teeth.

Initial dental examination revealed cases of inflammation in the periodontal tissue in all patients, the RMA index was around 6.72 ± 0.13 - $8.12 \pm 0.15\%$. Comprehensive treatment-and-prophylactic

measures and professional oral hygiene after fixation of insoluble orthodontic technique. The results obtained after the study indicate an improvement in the value of the RMA index among all patients compared with the initial examination.

It is now proven that dental whitening, professional and individual oral hygiene, control of carbohydrate intake, and the use of fluoride compounds are important components of prophylactic programs in patients. However, there are many tools for the prevention of dental caries and periodontal disease. There is a need to evaluate them using certain informative criteria and make recommendations based on the individual characteristics of the organism.

The mean initial value of the KPU index ranged from 1.96 ± 0.13 to 2.44 ± 0.17 , which was consistent with the low intensity of dental caries. According to WHO criteria, the intensity of dental caries was above average - 4.25 ± 0.26 - 4.78 ± 0.23 . Prior to the examination, all patients underwent oral sanitation, after which only the P component remained in the index structure.

The condition of the enamel in patients with orthodontic appliances in the diagnosis of light-induced fluorescence

The condition of the enamel	1 group		2 groups	
	A6c.	%	A6c.	%
Intact enamel	20	43,48	65	41,94
Caries is in the white spot stage	12	26,09	47	30,32
Surface caries 1	7	15,22	15	9,68
Surface caries 2	3	6,52	11	7,10
Moderate caries	2	4,35	8	5,16
Deep caries	2	4,35	9	5,81
	46	100,00	155	100,00

The following results were obtained using laboratory tests of mineral metabolism in the oral cavity in children: (Figure 3.2): in group 1 the pH of oral fluid was 6.9 ± 0.3 hydrogen units, in group 2 - 6.5 ± 0.3 hydrogen units. No statistically significant differences were found in the groups ($R > 0.05$). This indicates that the oral fluid in children is stable in this parameter, which is related to the active functioning of the oral buffer system during this period of child development.

Conclusion. Exogenous prophylaxis during 3 scheduled visits before installation of orthodontic appliances and every 3 months during orthodontic treatment by training in professional oral hygiene and individual hygienic procedures. Has anti-caries, anti-inflammatory and anti-inflammatory effect for quality care of the oral cavity during orthodontic treatment. It is recommended to use therapeutic-prophylactic toothpastes.

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