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STUDY OF THE PECULIARITIES OF ENAMEL MATURATION OF PREMATURELY ERUPTED PREMOLARS

Ravshanov Rustam Burxonovich
Clinical resident of the 1nd year of the Department of Orthopedic Dentistry, Samarkand State Medical University, Uzbekistan

Xojimurodov Burxon Ravshanovich
Scientific adviser: Assistant of the Department of Orthopedic Dentistry, Samarkand State Medical University, Uzbekistan

ABOUT ARTICLE

Key words: Enamel maturation, prematurely erupting premolars, early eruption of premolars, use of rinses Characteristics of enamel maturation in prematurely erupted premolars E.V. Summary.

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Abstract: The process of enamel maturation and caries development in prematurely erupted premolars is analyzed. The effectiveness of the use of mineralizing rinses during the period of enamel maturation in prematurely erupted premolars was evaluated.

INTRODUCTION

In this paper, the processes of enamel mineralization and caries development in prematurely erupted premolars are analyzed. The effect of mineralizing mouthwashes on prematurely erupted premolars was evaluated. The use of mouthwashes According to recent studies, the prevalence and intensity of caries of molars in children does not decrease. The lack of dental control and timely treatment inevitably leads to an increase in complications of caries, which leads to premature loss of false teeth. Currently, there is little statistical data on the dynamics of the early mineralization process and changes in the timing of eruption after early extraction of baby teeth. In particular, there is no current data in the available literature on the processes of enamel maturation during early eruption of premolars. Research is needed on this issue, since a violation of the processes of mineralization of hard tissues during early eruption can have a negative impact on the formation of caries resistance. It is also

necessary to introduce prevention aimed at optimizing the mineralization of early erupting premolars after removal of decidual molars.

The purpose of the study: to increase the effectiveness of caries prevention in early eruption of premolars.

METHODS

In accordance with the tasks set, a multifactorial study was organized, which involved 292 people aged 7-15 years at different stages. The maturation of premolars was studied for one year from the moment of complete eruption of the crown. The study was carried out using the electrometric method and the DentEst device. To select the optimal scheme for the prevention of premature premolars, a comparative assessment of the effectiveness of our "Formulations for the treatment and prevention of oral diseases" and mouthwashes was carried out, as well as a comparison of the "R.O.C.S." rinse aid .Thirty-five children aged 7-8 years with premature eruption of premolars were divided into three correlation groups to participate in a study of the effectiveness of prevention. The first group received treatment with the drug "Composition... , the second is "R.O.C.S." and the third is a control group in which all measures were taken, except for the use of the above-mentioned funds. Statistical processing was carried out using the actuarial statistics program, a standard Statistica for Windows package.

RESULTS

According to our data, the frequency of early removal of molars in children aged 5-8 years is quite high. The highest frequency and intensity of early removal of molars is observed in children aged 7 years, and a decrease in these indicators is observed in children aged 8 years, which is associated with the eruption of premolars about 1.5-2 years earlier than the average. Morphological and functional disorders of maxillary teeth, long-term occlusion and occlusion formation were revealed in children with prematurely removed mammary molars. The greatest prevalence of long-term occlusion and odontogenesis disorders (loss of space in the reference zone, premolar counterprick and premature eruption) is noted in the group of children aged 8-9 years. The prevalence of premature eruption of prematurely erupted premolars after early loss of primary molars was 77.90 ± 3.56%. Early removal of milk molars in children aged 7-8 years leads to earlier eruption, and mineralization of primary molars occurs in physiological terms. Upon examination of the erupting premolars, a sufficiently high frequency of visual disturbances of the enamel structure was revealed. These are hypoplasia in the form of spots or defects and uneven mineralization of enamel, characterized by the presence of surface (vertical or cuspid) matte stripes in areas of reduced mineralization. The normal enamel structure was

found in 58.04 ± 4.38% of physiological and 31.50 ± 4.13% of early eruptions. Structural anomalies were more common in the second premolars, where the dynamics of premolar enamel maturation within one year was studied using electrometry, which showed a delay in early eruption compared with physiological eruption. The level of early mineralization was significantly lower during early eruption. The electrical conductivity indices were highest in the cervical region and lowest in the apical region of the tooth in all groups. The same ratios were observed a year later (see Table. 2 and 3). The revealed mechanical patterns correspond to the idea that the rate of maturation directly depends on the initial level of mineralization of the tooth. The obtained dynamic electroanalytical parameters confirm that the process of premolar enamel maturation proceeds more intensively at a low level of mineralization detected at the early stages of eruption. However, this trend is observed only during the first six months after eruption; a year later, the enamel maturation has not yet been completed, and the level of mineralization during early eruption is lower than during physiological eruption in all the studied areas in the first and second premolars. Topographically, the mineralization intensity is higher in the molars and lower in the maxillary region and the petrus sulcus. The anatomical features of the sphenoid bone (easy access to oral fluid, lack of conditions for plaque formation) contribute to better mineralization. It should be noted that the highest electroanalytical indicators detected in the fossa are a prognostic criterion for the development of caries. The widely used method of mechanical isolation of pits reduces the level of caries on the chewing surfaces, but the risk of developing caries in the proximal and cervical regions remains high. Analysis of the dynamics of premolar caries development during the 2-year follow-up period in the early and physiological eruption groups revealed the following parameters: at the first examination after eruption, the prevalence of caries was 1.57 ± 1.12% and 1.26 ± 0.99%, respectively; after 2 years, the prevalence of caries was 7 In the group of early erupted bicuspids, caries was .78% more, and the intensity of caries was 0.65 ± 0.32 (0.25 ± 0.32 in the physiological eruption group). The topographic structure of carious foci in premolar teeth differed depending on the time of eruption. Caries of premolars of early eruption is more common in areas with low mineralization (approximal and apical surfaces). With early eruption, the mineralization rate is highest within 6 months after eruption, so prevention at this time is most effective. To stimulate the maturation of enamel, we have developed and patented a preventive remedy "Composition for the treatment and prevention of oral diseases" (Patent for invention of the Russian Federation No. 2380081, 01/21/10). It is a complex alcohol-free liquid composition that promotes the maturation of tooth enamel due to the presence of calcium diphosphate, sodium fluoride and mineral and vitamin concentrates of kelp. The developed "composition... The R.O.C.S. rinse aid, manufactured by Moscow, was used to evaluate the comparative effectiveness of the following products. Calcium glycerophosphate and magnesium

chloride in the rinse aid are substrates for alkaline and acid phosphatases and activate the absorption of calcium and phosphates into enamel apatite. The following preventive measures were carried out for children with premature eruption of premolars Hygienic education, conversations at parent-teacher conferences, distribution of hygiene products and brochures.

Clinical prevention:

Individual oral hygiene training and dietary modification, Measurement of hygiene indicators and dynamics of caries indicators, dental cleaning training, identification of deviations in the alignment of teeth and bite, Compositions for the treatment and prevention of oral diseases" and rinses "R.O.C.S.", deep fluoridation of periorbital fissures. The dynamics of the decrease in the conductivity index indicates a rapid mineralizing effect of prevention. In the first grow, after a month it decreased by 20.34%, in the second group ("R.O.C.S.") - by 18.17%, and in the control group without prevention - only by 7.93%. After 6 months in the group with the "Composition... The indicators of the foveal fissure decreased by 65.11% and the cervical fissure by 42.93%. In the control group, they decreased by 18.64% and 17.97%, respectively. The dynamics of the index values showed that the use of mineralizing agents accelerated the process of maturation of the enamel of premolars with premature eruption by more than 2 times.

CONCLUSION

Premature eruption of prematurely erupted premolars is a risk factor for the development of caries: after 2 years, the prevalence of caries in the group of prematurely erupted premolars was 62.64% higher than in the group of physiologically erupted premolars. In order to promote enamel mineralization in prematurely erupted premolars, prevention should be carried out immediately after eruption, especially in areas with the lowest level of enamel mineralization (maxillary region and periorbital fissure). The use of mineralizing rinses can accelerate the mineralization process of prematurely erupted premolars by 31.93% - 65.11% within 6 months after eruption.

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