CONCLUSIONS: In the pediatric field the prevention of caries lesions is one of the main targets. Early remineralization of initial enamel alterations may result in a delay in the progression of the carious process and an arrest of the same. The use of toothpaste with a high content of fluorine showed a better remineralizing effect, resulting in a more uniform surface compared to teeth after toothpaste treatment with 500 ppm fluorine. These do not improve the superficial morphology of the teeth, maintaining a relevant roughness that exposes the enamel more to the bacterial insult and the onset of carious lesions.

Comparative evaluation of the surface effect of two toothpastes with different fluorine concentration on primary teeth surface

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BACKGROUND: The purpose of this study is to analyze the effect of two toothpaste, with different fluorine concentrations, on the enamel surface of deciduous teeth. The study was performed *in vitro* by means of SEM microscopy.
METHODS: A selection of 20 deciduous molars was prepared. The teeth were extracted as a result of orthodontic treatments or physiological replacements. The procedures were performed at the UOC of Pediatric dentistry Sapienza University of Rome department of Oral and Maxillo-Facial Science. Each element, with no sign of cracks on the enamel, was preserved in normal saline and then sectioned at a cementum-enamel junction level. Successively the external and occlusal surfaces have been etched with 37% orthophosphoric acid for 1 minute in order to reproduce the demineralization that occurs in the oral environment. Each fragment of the same tooth was treated with two different toothpastes (with 500ppm and 1400ppm fluorine concentration respectively) for 15 days and manually brushed three times a day using pediatric toothbrushes for 2 min. Each section was rinsed and preserved in normal saline, renewed every brushing session. Finally a roughness analysis was carried out.
RESULTS: In the samples treated with 500 ppm both surfaces present a cribrosus layer, uneven, with a worn out appearance and visible crater-like spaces. In the samples treated with toothpaste at 1400 ppm of fluorine, an improvement of the surface morphology of the enamel has been highlighted, which however maintains a superficial roughness not completely attenuated, due to a non-homogeneous distribution of the same material. The roughness analysis values highlight these differences between the two materials.
CONCLUSIONS: The use of toothpaste with a high concentration of fluorine, compared to those with low concentration, shows a greater remineralizing power on surfaces of artificially demineralized deciduous teeth, ensuring a character of caries prevention. Toothpastes with 500 ppm, despite reducing the potential risk of systemic accumulation of fluorine (due to accidental ingestion of the material during daily oral hygiene), do not demonstrate significant effectiveness in the repair and protection of the enamel surface by acidic substances attack. These findings therefore translates into an increased risk of the onset of caries.

Lesch-Nyhan syndrome: evaluation of a modified bite device to prevent bite injuries

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Lesch-Nyhan syndrome (LNS) is a hereditary purine metabolism disorder, characterized by hypoxanthine-guanine phosphoribosyltransferase deficiency with uric acid overproduction, neurological and behavioral disorders.The prevalence reported in the literature is 1/380,000 to 235,000 births. Males are affected and females are heterozygous carriers. LNS begin to appear at 3-6 months of age with muscle hypotonia and difficulties in maintaining the sitting position and supporting the head. Other signs include psychomotor and mental retardation of varying degrees of severity and obsessive-compulsive self-injurious behavior, usually marked by stress, with bites and injuries to lips, tongue, cheeks and fingers. A 4-year-old patient with LNS showed up at the Department of Pediatric Dentistry of "Sapienza" University of Rome. The first signs of the disease occurred at approximately 3 months of age, but only genetic test confirmed the definitive diagnosis. From three months of age the patient showed typical bite injuries to hands and lips. Initially, patient' parents controlled hand injuries with application to arms of guardians which prevented bending of the elbow. As a solution to intraoral injuries, parents used an extraoral elastic as attempt to prevent biting. This solution was a source of discomfort for the child and caused decubitus of the lips. In agreement with other studies in the literature, the following therapy has been proposed by our department: two 2mm thick silicone soft bites applied to two arches. In the following days compliance and results were monitored: the upper bite had a positive effect, with good compliance, but the patient could easily remove the lower bite for inadequate retention given reduced dental support. Because literature does not provide specific guidelines, an individual bite device with innovative features was built. New silicone putty dental casts were taken and a study model was realized and digitized. This virtual working model could then be reproduced in the lab with the great advantage of not having to take further casts from the patient, without discomfort and stress. The main goal was improving comfort and compliance of new device with a better retention and stability. The inner part, in contact with teeth, was realized in 2mm thick soft silicone. The external part has been realized with hard transparent resin, extended to the fornix, with two shields which removed muscular pressure of lower lip and cheeks. A front handle in soft resin was inserted to help the parents inserting the device in child's oral cavity and improve the device' overall stability. A review of previous case reports from literature showed usual failure of standard mouth guards and successive resort to tooth extractions. In this case report, the patient underwent regular follow up visits that highlighted device positive effect. Compliance was excellent, the child wore device regularly without discomfort, no intraoral bite injuries were found, and parents reported a normal night's rest, which also improved the quality of life by reducing stress and pain due to injuries. Bites were also worn during soft food feeding, increasing adherence with a standard denture adhesive. The current 10 months follow up confirms the results obtained in the first few days of use. This case report show a correct management to prevent bite injuries due to LNS. For future studies, it is important to improve the multidisciplinary