

# Early childhood caries: the relevance of rehabilitation in the child's quality of life

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## Dear Editor,

Early Childhood Caries (ECC) is a multifactorial disease detected in children under 6 years of age who have one or more decayed, with or without cavitation and/or missing teeth.<sup>1</sup> The carious lesion begins in the enamel through the action of biofilm-derived bacterial acids, which promote demineralization of the dental tissue.<sup>2</sup> The carious lesion is acute, rampant and progressive in nature.<sup>3</sup> ECC substituted the old term known as “baby bottle tooth decay”.

The onset of the carious lesion is dependent on three factors: the host, the oral microbiota and the cariogenic diet, which combined with poor oral hygiene and nightly breastfeeding contribute to the establishment of the active carious lesion.<sup>3</sup> The carious process initially appears as a rough, opaque white spot in areas of biofilm retention, which is not early diagnosed and can evolve into cavitation and subsequent destruction of the dental element.<sup>4</sup> The development of ECC is microbiologically characterized by early infection with *S. mutans*; followed by the accumulation of microorganisms at pathogenic levels, resulting from frequent and prolonged exposure to the cariogenic substrate, thus enamel demineralization and tooth cavitation occur.<sup>5</sup> The substrate is essential for cell viability, proliferation and aggregation. The association between carbohydrate intake frequency (sucrose) is associated with the development of caries disease, according to the frequent consumption between meals and during sleep, when the protective effect of saliva is reduced due to low salivary flow.<sup>5</sup>

The treatment of dental caries will require the cooperation of parents and the children patients, with direct impacts on the routine of the family nucleus. Behavioral management of children older than 4 years is often required for treatment to be carried out.<sup>6</sup> The extent and sequelae of the lesions will determine the proposed restorative and rehabilitative treatment,<sup>7</sup> as well as disease control in order to avoid clinical signs of infection, pain, difficulty in chewing, psychological trauma and premature tooth loss.

ECC cases are characterized by extensive carious lesions with great coronary destruction of the dental element, and steel crowns are an excellent treatment alternative.<sup>8</sup> The best clinical results are achieved through the approach and motivation of the family nucleus.<sup>9</sup>

ECC is a serious public health problem that requires the efforts of all health professionals who care about children. Oral health is associated with general health; thus, the preservation of teeth includes the maintenance of oral and systemic health. Hence, the aim of this paper is to describe a clinical follow-up protocol, directed to the usual therapeutic approaches aiming to promote the quality of life of children.

## Clinical Follow-up Protocol

A 3-year-old boy attended the Pediatric Dentistry Clinic of the University Center of União da Vitória accompanied by the guardian. During the anamnesis, the parent reported previous negative dental experiences, uncontrolled diet and poor oral hygiene by the family nucleus. It was also reported that the child was using natural breastfeeding every night. On physical examination, active and cavitated carious lesions were diagnosed in the occlusal face of teeth 54, 64, 65, 84, 85, 74 and 75; added to the active carious lesions on the buccal surface of elements 51, 52, 61 and 62 (Figure 1).

Firstly, it was proposed oral adequacy, through oral health education of the family nucleus. For 4 consecutive weeks, professional prophylaxis and topical application of fluoride varnish were performed to inactivate carious lesions (Figure 2). The family nucleus was adequately motivated and oriented to perform biofilm removal at home with fluoride dentifrice twice a day. In this first appointment, the treatment plan settled for oral rehabilitation was provisional restorations with glass ionomer cement (GIC) on the teeth 54, 64, 65, 74, 75, 84 and 85. Concomitantly, the use of acetate crowns for the elements 51, 52, 61 and 62 was planned (Figure 2). However, as there was no adequate collaboration regarding oral hygiene by the family nucleus, the use of acetate crowns was reordered for the end of treatment. For

tooth 74, a stainless steel crown was cemented by means of the “Hall Technique”.

### Results

During the evolution of the dental care, the patient presented continuous improvements in behavior during dental procedures (Figure 2). Proper oral rehabilitation provided an improvement in children’s quality of life with repercussions on their social behavior. Improvement of stomatognathic system function combined with aesthetics provided the satisfaction of the family nucleus.

### Discussion

ECC is a disease with a high impact on children’s quality of life. Usually parents/guardians of infants and children who have ECC are unaware of this condition, have little or no information about the importance of oral hygiene and, in general, have low income.

Nunes *et al.* (2017)<sup>10</sup> conducted a study that proved that the spread of caries disease is associated with socioeconomic factors. Parents’ lack of knowledge and ingenuity in believing that deciduous teeth do not need treatment due to the fact that they will later exfoliate and be replaced by

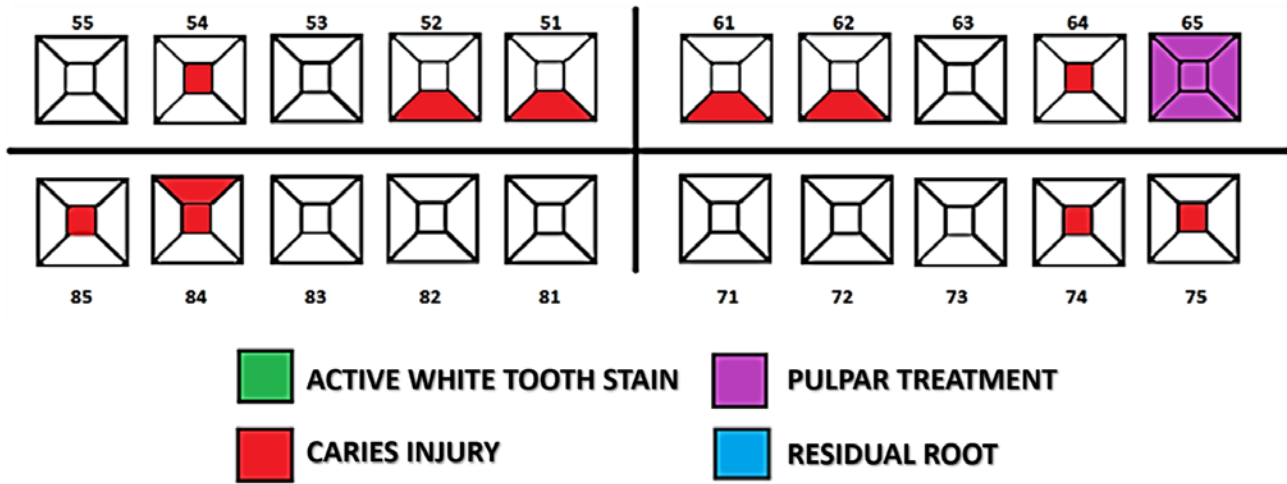


Figure 1. Initial odontogram collected during physical examination at the first appointment.

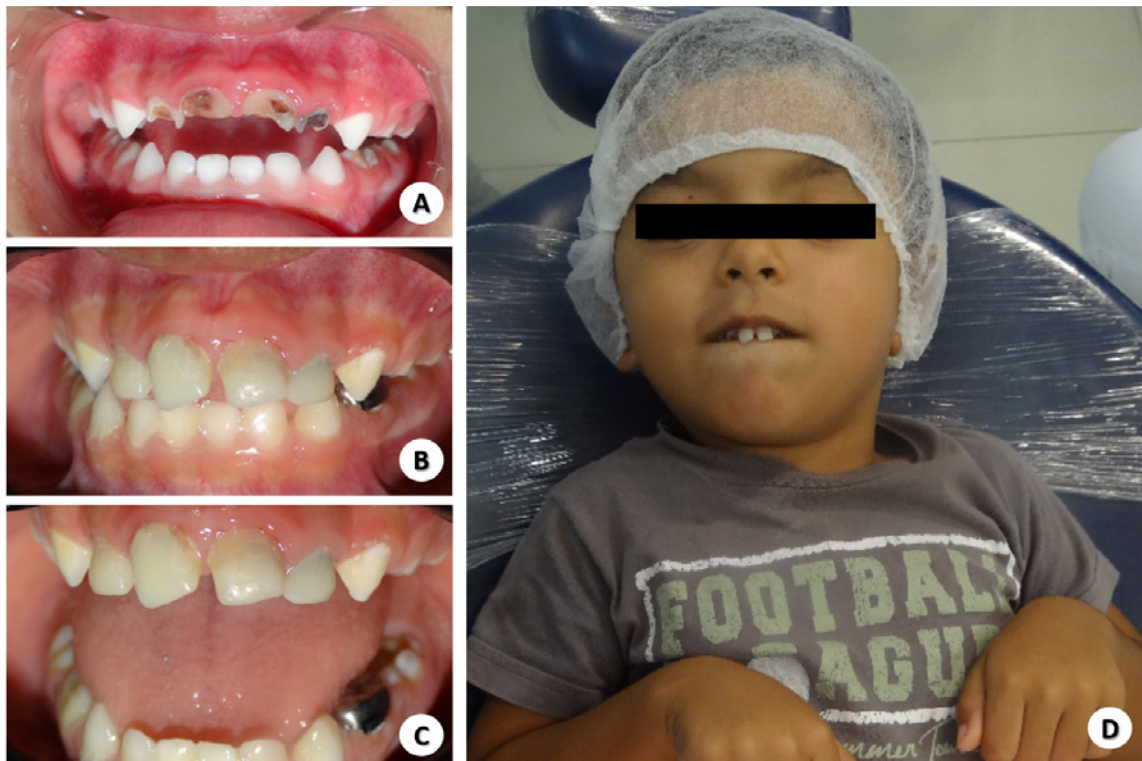


Figure 2. In “A” Clinical aspect of lesion inactivation after 4 weekly performance of prophylaxis and fluoride varnish applications. Whilst in “B” view of dental crown restorations of teeth 52, 51, 61 and 62. In “C” the acetate crown on tooth 75, and in “D” finalization of treatment and dental management conditioned for children.

permanent teeth will end up affecting babies/children.<sup>11</sup> Not only parents but also some of their pediatricians do not consider decayed deciduous teeth as a problem, since theoretically the permanent teeth will erupt healthy; however, the permanent teeth may be equally affected.<sup>12</sup> In addition, most parents think that caries are not harmful to health, and just compromise the aesthetics, which makes them ending up to worry only about this factor. Early understanding of ECC allows increased prevention of this disease.<sup>13</sup>

Inadequate biofilm removal can lead to rapid progression of the carious lesion, and children with extensive carious lesions are at high risk of developing permanent dentition caries associated with speech and eating problems.<sup>14</sup> Parents/guardians need to be reinforced about how to brush child's teeth, and the importance of decreasing frequency of fermentable carbohydrate intake.<sup>14,15</sup> These are very important factors in preventing ECC.<sup>15</sup> According to the American Academy of Pediatrics (AAP), children up to the first year of life should be referred to a dentist in order to be evaluated by the professional.<sup>16</sup> During the first year of life an oral health education program should be instituted, especially for low income families.<sup>17</sup>

ECC is a serious disease that affects children worldwide, and risk factors are related to eating behavior and oral hygiene. Frequent breastfeeding, especially nocturnal breastfeeding and low birth weight<sup>18,19</sup> increase the risk of developing ECC. In our case the patient performed breastfeeding at night, combined with the high consumption of fermentable carbohydrates from the diet. There is a high prevalence of ECC in infants with regular nighttime breastfeeding<sup>20</sup> and although this practice is important and has positive impacts on overall health, oral hygiene after breastfeeding should be encouraged to prevent ECC.<sup>21</sup> Thus, since occurrence of ECC is associated with breastfeeding for more than 12 months and bottle-feeding,<sup>22</sup> parents should be advised of the need for oral hygiene with fluoridated toothpaste to prevent sequelae from this common disease. Patient knowledge and behavior, quality of life, parental or guardian effectiveness in promoting oral health are factors that enhance the successful prevention.<sup>23</sup>

According to studies from an African American community, a high prevalence of caries is associated with lack of fluoridated water and habit of brushing teeth frequently, being considered linked to the socioeconomic factor.<sup>24</sup> Caries also have described as a political, medical, economic and social problem,<sup>25</sup> as well as a public health problem.

Caries disease is multifactorial, but mainly caused by the high consumption of sucrose coupled with poor oral hygiene.<sup>13</sup> The development of caries is dependent on oral microflora imbalance, which can be treated with the use of probiotics that will decrease the release of Cariogenic *Streptococci* and *Actinomyces*.<sup>26</sup> ECC is rapidly progressing,

clinically the first sign is a white spot in the cervical region that, if not treated, evolves into cavitation until complete destruction of the tooth.<sup>4</sup> Furthermore, unbalanced feeding before 12 months age is associated with future caries.<sup>28</sup>

Ismail *et al.* (2008) state that overweight children are more likely to be affected by ECC because they consume many unhealthy foods and do not perform proper oral hygiene.<sup>29</sup> According to the study, there was a relationship between Body Mass Index (BMI) and ECC, since children with carious lesions presented higher BMI scores than caries-free children.<sup>29</sup> Caries-free children generally eat healthy foods, consequently having low BMI scores and, since unhealthy foods contain a significant amount of sugar, are the main causes of carious injury.<sup>28,29</sup>

Diagnosis directs treatment, the simplified approach with favorable prognosis is Atraumatic Restorative Treatment (ART).<sup>30</sup> ART is a simple, patient-acceptable technique without the use of drills. The material of choice is GIC, which is bonded to the tooth structure by chemical adhesion, and the fluoride released from the material prevents caries progression.<sup>30,31</sup> Early diagnosis, still during the white spot lesions stage, can prevent disease progressions.<sup>32</sup>

In this presented case, due to the advanced carious lesions, partial removal of carious tissue was performed. For the anterior-superior region affected by the ECC, acetate crown restorations were performed using composite resins,<sup>1</sup> because the aesthetic region promoted social and functional impacts to the patient. The holistic view of the infant patient promotes interventions in areas other than dentistry for the success of clinical treatment and adequacy of the developing patient's dental and functional alterations.<sup>33</sup> The child's temperament can become a compromising factor for treatment in some cases of non-collaboration in relation to the procedures.<sup>34</sup> The combination of dentistry and psychology may be necessary, and behavior management techniques should be used as a way to contribute to dental care.<sup>35</sup>

The combination of dentistry with other areas will not always be enough for a good prognosis, as in our case in which patient's bad behavior and the non-cooperation by the caregivers eventually affected the treatment prognosis. The early and exhaustive approach to ECC tends to promote family adherence to the proposed dental treatment, allowing the monitoring of child's development, with a view to the quality of life of the infant patient.

## Conclusion

ECC is a disease of severe public health impact. However, the early approach of the family nucleus regarding the pathology promotes quality of life for children. The child's development combined with frequent appointments with the dentist promote the acceptance of dental care and favors the longevity of oral health.

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## Mini Curriculum and Author's Contribution

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