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Case Report Article

Oral rehabilitation of patient with severe early childhood caries: a case report

Luciana Pedroso[1]
Camila Zucuni[1]
Letícia Westphalen Bento[1]
Juliana Yassue Barbosa da Silva[2]
Bianca Zimmermann Santos[1]

Corresponding author:
Bianca Zimmermann Santos
Rua Guilherme Cassel Sobrinho, n. 275, apto. 902 – Nossa Senhora das Dores
CEP 97050-270 – Santa Maria – RS – Brasil
E-mail: biancazsantos@hotmail.com

[1] Department of Dentistry, Franciscan University Center – Santa Maria – RS – Brazil.
[2] Department of Dentistry, Positivo University – Curitiba – PR – Brazil.

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Abstract

Introduction: Severe early childhood caries (S-ECC) is very common in pre-school children and shows a pattern of development which is defined and symmetrical, beginning on the cervical third of labial surface of maxillary anterior teeth. Accordingly, it can damage speech, swallowing, feeding, development, esthetics and self-esteem of the child. **Objective:** To report a case of a 5-year-old female patient with S-ECC on teeth #51, #52, #61 and #62. **Case report:** The patient came to dental clinic of the university with her mother for dental care. During the interview, the mother reported that her daughter used to drink milk in baby bottle at day and night with sugar content. Moreover, oral hygiene was not performed after bottle feeding at night. On clinical examination, the teeth #51, #52, #61 and #62 presented coronal destruction, and the mucosa associated at these teeth was very inflamed. Radiographically, it was found that carious lesions were limited to inner dentin. The treatment plan included education on oral hygiene and diet guidance. Rehabilitation with acetate matrixes was the treatment chosen for teeth destroyed by caries. **Conclusion:** This study demonstrated that the use of acetate matrixes is an effective alternative to return aesthetics and functionality to teeth of patients with severe early childhood caries.

Introduction

Currently, the aiming of Pediatric Dentistry is that the patient reaches maturity free of diseases affecting in oral cavity. It is important that its action initiates during pregnancy and continues up to the birth of the baby. Thus, preventive measures of oral diseases should begin at the pregnancy period through guidance for an adequate feeding of the mother, rich in vitaminic elements required for tooth formation. Additionally, information on oral health related to both the mother and infant is part of the prenatal examination, assuring that the infant has a childhood free of caries [9].

However, unfortunately this is not the reality faced by all children. Tooth caries is the most common chronic disease in childhood and a great problem for world public health [22]. Severe early childhood caries (S-ECC) is common and damages speech, swallowing, feeding, development (height and weight), esthetics and emotional (self-esteem) of the child.

Habits, such the unrestricted use of baby bottle, mainly with sugar content during night, are associated with S-ECC [12]. The difficulty in performing oral hygiene of the child and maintenance of food remnants during longer periods, mainly during sleepiness, also contributes for the establishment of the disease [21].

The initial clinical sign of caries is the presence of opaque and white spots. If not controlled, the process evolves to the appearance of cavities, and this can lead to the destruction of all tooth crown and initiate infectious root processes because of pulp involvement. ECC initiates on the cervical third of the labial surfaces of the maxillary anterior teeth and concomitantly affects the occlusal surface of the maxillary and mandibular first molars, maxillary and mandibular canines and second molars [14]. At more advanced stages, it affects also the mandibular incisors [15].

Considering the impact on the quality of life and the possibility to prevent, arrest or even treat ECC, it is of great importance that the dentists, especially Pediatric Dentists, are capable of diagnosing and treating this pathology, returning the oral health and smile aesthetics to these children [3].

Therefore, the aim of this study was to report a clinical case of a female patient, aged 5 years old, with severe early childhood case on teeth #51, #52, #61 and #62.

Case report

Patient K.B.A, female, aged 5 years old, came to the Dentistry Clinics of the Franciscan University Center (short Unifra), in the city of Santa Maria (RS/Brazil), taken by her mother. The chief complaint was "pain in the front teeth and the first appointment at the dentist". Moreover, according to the mother, the patient suffered bullying at school because of the appearance of her teeth.

During anamnesis, the mother of the child reported that her pregnancy was uneventful with neither medical nor dental treatments and without use of medications. The child was born by normal delivery at nine months of pregnancy. The mother also reported that the child had good general health.

With regard to diet, the mother informed that the patient was fed with breast milk until 3 years and 6 months of age and then began to use baby bottle at day and night. Its content was usually yogurt. At three months of age, she began to eat fruits and other foods rich in saccharose and carbohydrates.

Oral hygiene was performed by both the mother and the child, three times per day (morning, afternoon and evening), with fluoride toothpaste but without flossing.

During clinical examination of the soft tissues, melanin pigmentation was observed. In the examination of tooth tissues, the following alterations were observed: active carious cavity on teeth #54 and #64; crown destruction of teeth #51, #52, #61 and #62; and the other teeth showing non-cavitated active lesions possible to be arrested by controlling the etiological factors and fluoride therapy (figure 1).

Figure 1 – Initial image of the patient's smile

Radiographically, tooth #54 showed a radiolucent lesion on the root furcation, evolving the tooth germ of the permanent successor; tooth #64 exhibited carious lesion on the inner half of dentine and the cervical third of the root; teeth #51, #52, #61 and #62 also had carious lesions at the inner half of the dentine (figure 2).

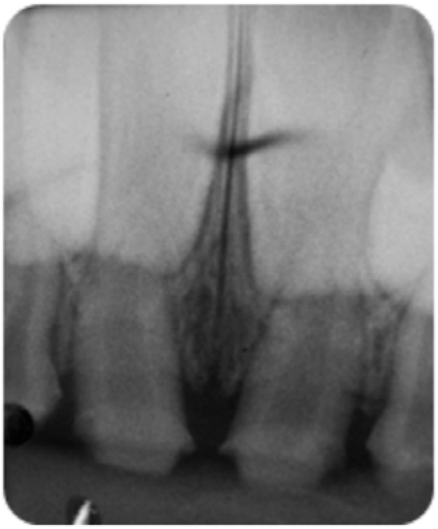

Figure 2 – Radiographic examination evidencing carious lesions at the inner half of the dentine of teeth #51, #52, #61 and #62

After the analysis of anamnesis, clinical and radiographic examination, a careful treatment planing was elaborated, including educative measures of oral hygiene, diet counseling and fluoride therapy. The extraction of teeth #54 and #64 (figure 3) was chosen because of bone rarefaction at the furcation of tooth #54 and the radiolucent lesion on the cervical third of tooth #64. Consequently, the patient was referred to early preventive orthodontics.

Figure 3 – Occlusal view showing the clinical aspect of the maxillary arch after the extraction of teeth #54 and #64

To rehabilitate teeth #52, #51, #61 and #62, acetate matrixes (Coroas decíduas – TDV, Brazil) were chosen.

Sequence of clinical procedures for teeth #52, #51, #61 and #62

Prior to the procedure, a study cast was obtained for the initial adjustment of the matrixes (figure 4).

Figure 4 – Study cast of the maxillary arch for adjusting the acetate matrixes on the incisors

With the aid of straight scissors, the acetate matrixes were adjusted for each tooth on the study cast (figures 5 and 6).

Figure 5 – Adjustments of the acetate matrix of tooth #52 on the study cast

Figure 6 – Acetate matrix adapted on tooth #52 on the study cast

Next, shade B1 of the resin composite (Opallis, Brazil) was chosen. Following, carious tissue was removed with the aid of dentin excavators (figure 7).

Figure 7 – Removal of carious tissue from tooth #52 with dentin excavators

At the mouth, the marginal adaptation of the acetate matrixes were checked (figure 8) and then, orifices on the palatal surface of the matrixes (figure 9) were executed to enable the flowing of the resin composite.

Figure 8 – Checking of the marginal adaptation of the acetate matrix on tooth #52, after caries removal

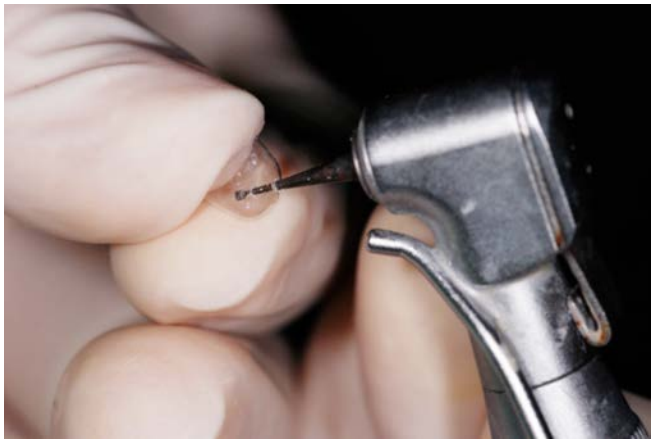

Figure 9 – Orifice on the palatal surface of the acetate matrix for flowing of the resin composite excess

Under relative isolation, the tooth remnant was etched with 37% phosphoric acid (Condac, FGM, Brazil) for 7 seconds. Then, with the aid of a thin microbrush, the adhesive system (Single Bond 2, 3M ESPE, Sumaré, São Paulo, Brazil) was applied, according to the manufacturer's instructions. The resin composite was then inserted into the acetate, atrix (figure 10) up to its entire filling and, then, placed onto the tooth.

Figure 10 – Acetate matrix completely filled with resin composite

After the removal of excesses of resin, light-curing was executed onto each surface for one minute with the acetate matrix in position (figure 11).

Figure 11 – Light-curing of the labial surface of tooth #52

After the polymerization of the resin, the acetate matrix was removed with the aid of a scalpel blade (figure 12). Finishing procedures were executed with polishing drills. Polishing procedures were executed at another appointment.

Figure 12 – Removal of the acetate matrix with the aid of scalpel blade

The patient reported to be very satisfied with the treatment because the restorative treatment gave back tooth function and aesthetics (figure 13).

Figure 13 – Final image of the patient's smile

This case report was submitted and approved by the Ethical Committee in Research of the Franciscan University Center under protocol no. 235.049.

Discussion

ECC is considered as any tooth smooth surface with caries but with or without cavities, in children aged lesser than 3 years of age. It is also considered as ECC if the child has more than four, five and six surfaces affected on anterior primary teeth at 3, 4, and 6 years of age, respectively [11]. Thus, ECC

is a particular caries type affecting primary teeth. It usually begins on maxillary incisors, followed by maxillary and mandibular molars, and affecting all teeth sequentially as they erupt in oral cavity. Carious lesions can rapidly progress if not treated, resulting in pain and infection [17].

Despite of the world ECC decreasing, it is still prevalent. It is estimated that 8% of children at 2 years old have at least one tooth damaged. This prevalence increases for 48% in children at 7 years old [20].

Concerning to the etiologic factors, although breast feeding is related to the growth and development of the infant at the first months of life and it is considered as the baby's main source of nutrients [1], either longer breastfeeding or bottle feeding together with the frequent consumption of substrates rich in carbohydrates may cause ECC [18]. In the case reported herein, all these factors were present associated with a poor oral hygiene.

Moreover, this condition was also associated with the use of sugar on pacifiers and the frequent use of medications with sugar. Other factors strongly related to ECC are: social-economic status, level of education of the parents, and predisposing conditions of the host [6, 18]. Therefore, it is necessary that the dentists know the real risk factors associated with caries in both infants and pre-school children [13], so that they can interfere in the disease process in the best possible way.

Various alterations are observed in children with ECC, mainly at advanced stage, which can compromise their quality of life. Among these alterations, it can be cited: nutritional problems, reduction of height and weight, pain, aesthetic and mastication impairment, swallowing and speech problems. Either isolated or in conjunction, these factors can compromise the child's self-esteem during an important period of the development [10].

ECC treatment implies in the compliance among the dentist, mother, family, and child so that a new food routine is introduced and a new perspective regarding to oral health is accepted [17, 23]. Concerning to the oral rehabilitation of the patient, it is important to identify the stage in which the caries lesions are to achieve a better planing [5]. Minimum tooth destruction enables the remineralization through fluoride therapy [15]. The American Academy of Pediatric Dentistry recommends the modified atraumatic restorative treatment (ART_m) if there is the slow progression of the caries on dentin, considering the little age of the patients and the easy execution of this type of procedure [2].

In cases that the tooth remnant is very destroyed by the disease, the choosing for the aesthetic restorative technique will depend on the age of the child, social-economic status, the compliance of both the parents and child, and the size of tooth remnant [24].

Stainless steel and polycarbonate crowns; acetate or celluloid matrixes; resin facets; autogenous and heterogeneous bonding; pivot crowns with metallic posts; resin or metallic posts; partial fixed dentures or total dentures, among other techniques have been the treatment options currently available [4].

The acetate matrixes filled with resin composite were chosen for the oral rehabilitation in this case report and have been a good option according to literature [7], especially in cases in which tooth crowns are much destructed. This technique enables that the resin covers all structure of the tooth remnant, which results in the improvement of the resistance and the protection of the tooth against the biofilm and further caries [4]. Moreover, this restoration type provides resistance and aesthetics [8].

Conclusion

Based on the information above, it is important that the dentists are capable of early diagnosing and treating ECC. The treatment should provide a positive psycho-social impact on these patients, not only by oral health recovering but also by the reestablishment of a better quality of life [3]. In the case here reported, it was possible to achieve a satisfactory result, because both tooth function and aesthetics were reestablished, consequently with the improvement in the child's self-esteem.

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