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TREATMENT OF EARLY CHILDHOOD CARIES IN PRIMARY FRONTAL TEETH – CASE REPORT

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ABSTRACT

Early childhood caries is the most frequent pathology of primary teeth, which rapidly evolves to pulp involvement and massive destruction of the tooth that often lead to extraction. This case report describes a morpho-functional restoration of frontal teeth using celluloid strip crowns and polymerizable glass ionomer cement. One of the main advantages of this non-traumatic treatment was the elimination of cavity preparations.

Key words: primary teeth, early childhood caries, coronal restoration

INTRODUCTION

Early childhood caries (ECC), formerly known as "nursing bottle caries", is a particular form of caries seen in primary dentition, which occurs before the age of 3 (1). The diagnostic of ECC requires the presence of one or more decayed, missing, or filled primary teeth in children aged 3 or younger.

The term "early childhood caries" was suggested in 1994 by the Centre of Disease Control and Disease Prevention (CDC) in the attempt to focus the attention on multiple factors (socio-economic, behavioural and psycho-social factors) which are involved in the appearance of caries at such an early age (2).

The aetiology of early childhood caries is multifactorial, but in the majority of situations an imbalanced diet (3) and unhealthy habits (4) are incriminated.

Streptococcus mutans is a main cariogenic pathogen and represents the microbiological risk factor of the disease. This microorganism stagnates in the oral cavity and leads to damage by demineralizing dental structures in the presence of fermentable carbohydrates such as sucrose, fructose and glucose (5,6).

Feeding patterns are also very important in the aetiology of early childhood caries, both breastfeeding and bottle feeding (formula) being incriminated. Among the two, breastfeeding is favorized because of the benefits it brings in comparison to artificial feeding. Breast milk has *Lactobacilli*, human casein and immunoglobulin A (IgA) which can inhibit the growth and attachment of *S. mutans*. On the other side, natural sugars in breast milk could become a substrate for cariogenic bacteria, leading to caries development. A very important aspect to consider is the frequency, time and duration of the breast feeding (7,8).

The essential substrate for cariogenic bacteria is provided by carbohydrates. Sugar intake plays a substantial role in the

evolution of dental caries, and if the carbohydrates exposure occurs at an early age, the greater is the risk.

Socio-economic factors are also important in the evolution of early childhood caries. Studies show that children with lower educational status of the parents, lower intakes and precarious economic conditions have a greater risk for developing early childhood caries (9).

In its evolution, ECC goes through 3 stages: a white chalk-ish spot (considered to be a reversible stage), a yellow or brown cavity (degradation of the hard tissue) and tooth surface loss (10).

The treatment of early childhood caries depends on the evolutional stage of the disease, children's age and also his social, behavioural and medical history (11). The first step is a clinical examination in the paediatric dentist's office before the age of 1 (appearance of the first teeth). During these examinations, dentists could identify children with low risk of ECC, who may not need treatment but only proper hygiene and diet, children with moderate risk who need lesion restoration and children with high risk of ECC who need primary teeth restoration or even extraction. (10)

MATERIALS AND METHOD

A 4 years old child was referred to the dental office for cold and sweet sensitivity in upper front teeth. Aesthetics was also a problem, giving that other children in kindergarten were bullying him for his "black teeth".

Upon examination, cavitated carious lesions were discovered in upper frontal teeth, without pulp involvement. The affected teeth were 52, 51, 61, 62, 63 as seen in fig.1.

Figure 1. Patient's initial dental state upon clinical examination

The mother was informed about the treatment plan involving topical remineralizing paste applied for 2 weeks, in order to help the demineralized tooth structures. The recommended paste contained casein phosphopeptide -amorphous calcium phosphate (CPP-ACP) (Tooth Mousse, GC Dental).

In the treatment session, tooth surfaces were prepared by manually removing soft dentin with extra care in order to avoid opening the pulp chamber. The remineralizing effects and carious arrest properties of the glass ionomer cement were considered in the removal of affected structures.

Celluloid strip crowns (Celluloid Crown Forms, Dentsply) of various sizes and shapes were carefully selected for each tooth, and trimmed for intimal adaptation to the gingival surfaces. Orifices were created on the strip crowns in order to release excess material and air bubbles.

After selecting the crowns, 37% phosphoric acid was applied on each tooth for 10 seconds, to improve the chemical bond of the glass ionomer

cement (fig.2).

Figure 2. Applying the 37% phosphoric acid

After rinsing with water and drying the tooth, glass ionomer cement (Kavitan LC, Spofa Dental) was mixed for 10 seconds and immediately loaded into the celluloid strip crowns. The crows were then inserted firmly onto the teeth (fig.3).

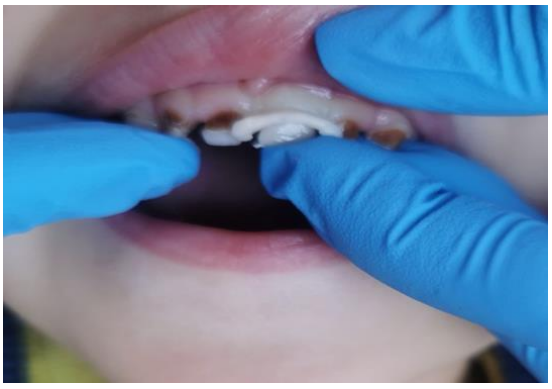

Figure 3. Applying the loaded strip crown onto the tooth

Excess material was carefully removed (fig.4) and each tooth was photo polymerized for 20 seconds.

Figure 4. Strip crowns after the removal of excess material.

After the complete setting of the material, celluloid strip crowns were carefully removed (fig.5).

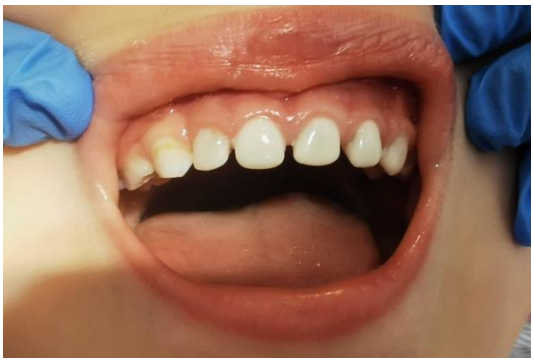

Figure 5. After the removal of the strip crowns.

The final step of restoration was the finishing stage, performed with high speed polishing burs and hand piece polishing discs (fig.6).

Figure 6. Final aspect after restoration.

RESULTS AND DISCUSSIONS

Primary teeth play a very important morpho-functional role in the oral cavity, through their masticatory, phonetic and aesthetic functions. Another key role they play is maintaining the space for the permanent teeth on the dental arch.

The rapid evolution of early childhood caries to pain, feeding difficulties and pulp involvement should be considered. Therefore, restoring teeth with ECC should be an objective for all paediatric dentists, especially considering the young ages this condition develops.

Celluloid strip crowns is a relatively rapid restoration technique, which means it can be used in very small children, with the main goal of preserving primary teeth on the arch until the eruption of permanent successor teeth (12,13).

Celluloid strip crowns and glass ionomer cement restoration are described as the best minimally invasive alternative compared to traditional restoration techniques used in early childhood caries.

Strip crowns are used in demineralization, trauma, hypoplasia and tooth structure anomalies. This technique is used in massive tooth destruction, its success rate depending on the remaining natural supporting structures of the tooth, with a life expectancy between 6 months and 27 months (14).

CONCLUSIONS

In modern society, demand for aesthetic restorations is growing in paediatric dentistry. Parents are taking into consideration the durability, costs and aesthetics of dental restorations.

Restoring primary front teeth with celluloid strip crowns and glass ionomer cement is a reliable, easy to use technique, which provides very good aesthetic results even with little supporting tissue.

*All authors contributed equally to this work.

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