

ECC FULL REHABILITATION WITH INDIRECT COMPOSITE RESTORATIONS: A CASE REPORT

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SUMMARY

Baby Bottle Syndrome, also known as Early Childhood Caries, is a diffuse decay condition of dental hard tissues in deciduous dentition. During the night, *Streptococcus mutans* and *Streptococcus sobrinus* ferment carbohydrates from food and beverages, producing lactic acid that induce enamel demineralization.

This case report describes the treatment of a small patient with severe loss of dental tissue both in the anterior superior area and the posterior sectors. Aim of this case report was to describe a complete rehabilitation of the posterior and canine areas with indirect composite restorations.

Key words: BBS, ECC, indirect composite restorations, *Streptococcus mutans*, *Streptococcus sobrinus*, vertical dimension.

Introduction

Baby Bottle Syndrome (BBS), also known as Early Childhood Caries (ECC), is a diffuse decay condition of dental hard tissues in deciduous dentition due to carious processes that generally affect the vestibular surface of the anterior upper teeth and all posterior primary molars (1-3). Typically, the inferior anterior teeth are intact (4).

The original definition stands for the child's habit of falling asleep with baby bottles containing milk and sugary drinks causing serious damage to the dental elements (5). During the night, bacteria, such as *Streptococcus Mutans* and *Streptococcus Sobrinus* (6-12), are able to ferment carbohydrates from beverages, and produce lactic acid. The lactic acid drastically decreases the oral pH, thus provoking the demineralization of the dental enamel. Subsequently it is the *Lactobacillus* (13, 14) that plays a fundamental role in the progression of the carious pathology (15, 16).

In infants, BBS affects maxillary incisor first, then maxillary and mandibular molars, and because of the protection of the tongue, the

mandibular incisors are spared (17). Progression in infants depends on the chronology in which the dentition erupts and the dietary habits.

Frequently BBS affected patients also have a serious impairment of mastication and phonetics, as the residual dental structures are very often limited to the roots alone (18).

The severe loss of vertical dimension, caused by the loss of dental tissue, leads to the development of malocclusions such as positional III classes (19-21, 98, 102).

These patients also present difficulties in eating, talking and relating, thus compromising not only physical but also psychological and social health (22-25). Some of these patients also manifest nutritional deficiencies, delays in development and a lowering of immune defenses, thus predisposing the patient to a multitude of infections not only related to dental problems (26-28, 99).

The treatment is very complex and is conditioned by a series of factors such as the patient's age, the extent of the damage and the related complications, the compliance of the small patient and the socio-economic conditions of the family or the caregivers (29-44).

Case report

This case report describes the treatment of a small patient of about 6.5 years with severe loss of dental tissue both in the anterior superior area and in the posterior sectors (Figure 1).

In accordance with the little patient's parents, treatment plan was a complete rehabilitation of the posterior and canine areas, as the upper anterior teeth, severely damaged and close to the ex-foliation, were planned for extraction.

Given the severe loss of hard tissues and vertical dimension, an indirect conservative rehabilitation of the posterior and canine areas of both the upper and lower arch was chosen.

The patient's high level of collaboration and family socio-economic availability have allowed us to opt for a treatment plan with indirect com-

posite restorations with partial or total coverage. Firstly, dental impressions of both arches were taken to study the case.

The preparations for the composite inlays, according to a minimally invasive principle and considering the limited duration of the restorations consisted in the selective removal of the carious tissues and in the elimination of all undercuts.

In one appointment all elements 53, 54, 55, 63, 64, 65, 74, 75, 84 and 85 were prepared (Figure 2).

Previously the patient did an oral professional hygiene, to reduce oral plaque and oral bacterial species (45-52, 100).

After local anesthesia (53, 54) and after having displaced the gingiva with retraction cords 00 and 000 (Ultrapack), a putty and light silicone bi-component single phase impression of the two arches were taken. Preparations did not alter sig-



Figure 1
Preoperative situation. Front view and upper and lower arches.

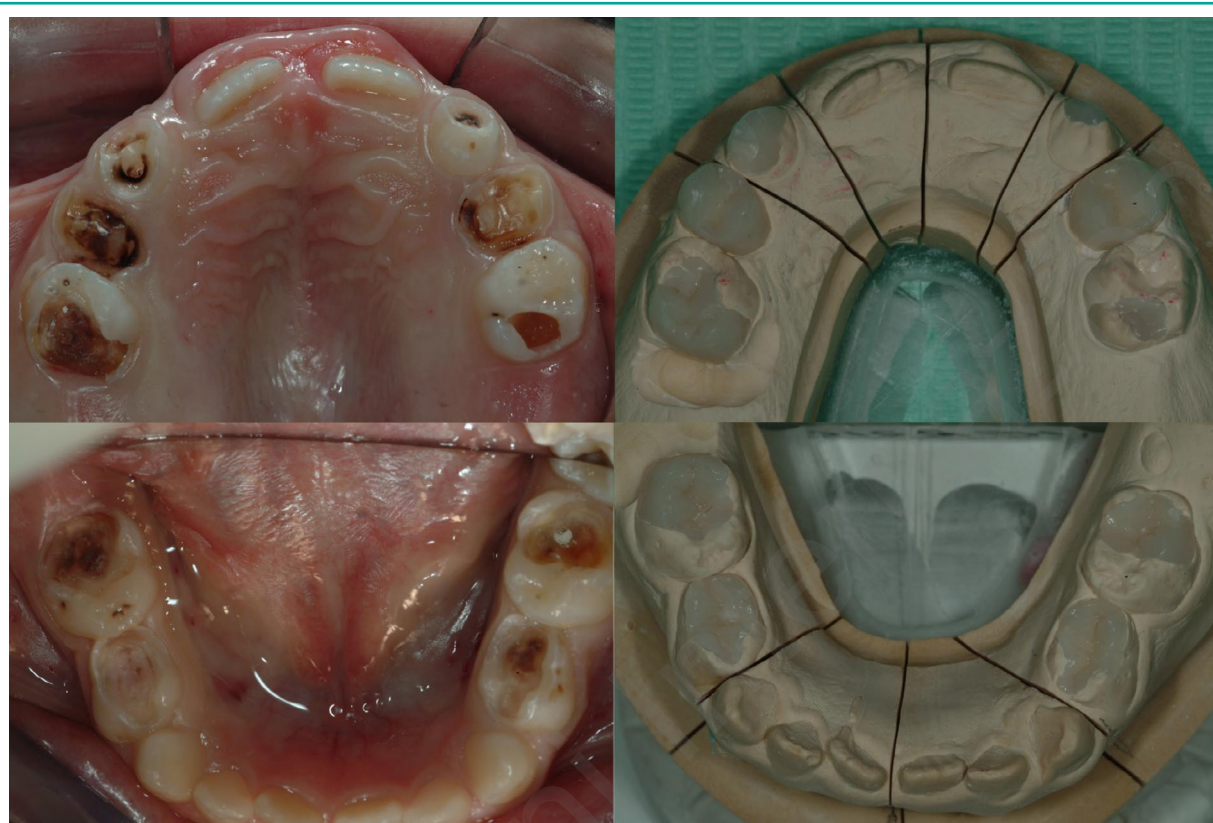


Figure 2
Cavity preparation and indirect restorations ready for cementation from the lab.

nificantly the occlusion of the little patient so there was no need or possibility of temporization. After one week, time needed to realize all indirect restorations in the lab and also to let the little patient rest between dental chair sessions, it was time to cement the indirect restorations and restore vertical dimension. For the upper arch, cementation took place in two phases. First phase: to restore the vertical dimension and the canine guide we started cementing inlays on 53, 55, 63 and 65. After local anesthesia, rubber dam insulation is mandatory; it is necessary to adapt properly the dam in the gingival sulcus and expose completely the prepared margins. Once the correct insulation has been carried out it was possible to go on with the adhesive procedures. Teeth were acid etched with 37% orthophosphoric acid for 30 seconds on the enamel and 15 on the dentin, rinsed with abundant water jet and

gently air dried. The adhesion was performed with a two-steps total-etch (Optibond FL, Kerr) dental adhesive light cured for 20 seconds each tooth. Composite indirect restorations were all pretreated with sandblasting, acid etching for 30 seconds, two-steps total-etch adhesive and finally cured for 20 seconds each.

The cementation of the indirect restorations was made using the same composite material used to produce the inlays (Enamelplus, Micerium). The composite resin was placed on the prepared tooth surface and spread with a spatula. Each restoration was then adapted to the related cavity, previously filled with composite, pushed with a ball instrument by the long axis of the tooth. During seating of the restorations all composite excesses were gradually removed prior to final curing to speed up finishing procedures. After complete seating and perfect fitting of the

restorations, an even more pronounced axial pressure was applied to the cementing restorations and light cured under pressure for 40 seconds each tooth. Each excess has been removed manually with sharp carvers and finished with fine grit diamond burs. The margins of the restorations have been polished with silicone rubber burs, diamond pastes and aluminum ox-

ide (Figure 3).

In a separate and subsequent appointment elements 54 and 64 were cemented in the same described manner (Figure 4). One week after, the lower arch elements 74, 75, 84 and 85 were isolated, and the restorations were cemented following the same maneuvers and using the same materials used for the upper arch (Figures 5, 6).

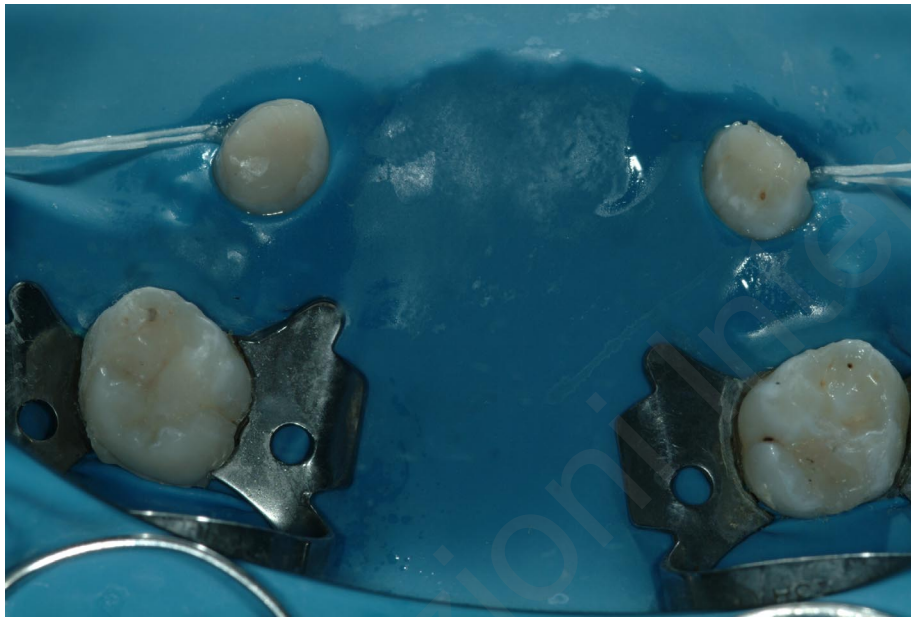


Figure 3
Rubber dam isolation during cementation of inlays on 53, 55, 63 and 65.



Figure 4
Final intraoral photo, upper arch.



Figure 5
Final intraoral photo, lower arch.



Figure 6
Final intraoral photo, front view.

Discussion

Modern restorative dentistry aims to restore the function and aesthetics of compromised dental elements with direct and indirect restorative techniques. Today, direct adhesive conservative

techniques have been refined more and more, as they are less invasive and expensive for the patient. However, even today the indirect restorations represent a valid solution in all those cases in which the dental element is strongly weakened, but there is still a way to avoid complete prosthetic coverage (55-60, 89-97, 101).

Rehabilitation by means of indirect restorations in a paediatric dentistry case was justified by the need to gain a quick and predictable restoration of function and a correct vertical dimension (61-88). The adhesive technique permits the preservation of all healthy tissue and a very good overall quality of the tooth-restoration complex. Modeling of the composite inlays replicating the morphology of the deciduous teeth, was an interesting challenge for the dental technician. Even in the pediatric age, if it is possible, it is always better to choose personalized indirect composite resin restorations rather than preformed ones.

Conclusions

All operator commitments for procedural rigor demonstrated in this case report reflects the Authors' convictions that the treatment of paediatric patients do require the same rigorous training path needed for the treatment of adult patients.

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