

Human enamel veneer restoration: an alternative technique to restore anterior primary teeth

Luciana Butini Oliveira, DDS, MSD*/ Tereza Keiko Tamay, DDS**/ Marta Dutra Machado Oliveira, DDS, MSD***/ Célia Regina Martins Delgado Rodrigues, DDS, MSD, PhD****/ Marcia Turolla Wanderley, DDS, MSD, PhD*****.

Restoration of severely decayed primary teeth is a clinical challenge in Pediatric Dentistry. Among the restorative treatment options, the use of prefabricated crowns and resin composite restorations, either by means of direct or indirect techniques is mentioned in the literature. The purpose of this article is to describe the rehabilitation of primary anterior teeth in a 5-year-old patient. Dental treatment consisted on an anterior space maintainer prosthesis made with natural primary teeth, plus human dental enamel veneer (facet) restorations. The advantages of this technique are better esthetics and the natural enamel has physiologic wear and offers superficial smoothness and cervical adaptation compatible with those of the surrounding teeth.

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INTRODUCTION

Even though dentistry currently emphasizes oral health promotion, there still are children with many carious lesions. These children may even lose their teeth that may compromise esthetics, function and guidance of the erupting permanent dentition. Often these cases are the result of rampant caries due to dietary habits such as bottles at night without removal of dental biofilm (dental plaque).¹

When restoring primary anterior teeth, dental professionals seek to restore oral function such as speech and mastication as well as dental anatomy and esthetics. In spite of the fact that restorative techniques and materials have gone through notable development in order to obtain a more natural look, esthetics is not always satisfactory in primary teeth.

The use of human enamel veneer restoration is an alternative tech-

nique that allows a more harmonious and esthetic oral rehabilitation in children. Reports on the use of dental fragments as restorative material have been used since 1960's, when the rehabilitation of a fractured permanent central incisor using the patient's natural crown was recorded.²

Many studies have shown the use of natural teeth from a Teeth Bank, for restorations of not only primary molars, but also anterior teeth.³⁻¹¹ The natural teeth as a restorative technique in anterior region have been employed when there is total or partial coronal destruction due to dental caries, trauma, or malformation and alteration in mineralization of dental tissues. Bussadori *et al.*¹⁰ reported the treatment of esthetic veneer of human dental enamel in a three-year-old child after trauma that caused concussion and accentuated color alteration. The use of esthetic facet from human enamel obtained from teeth bank resulted in clinical success and showed to be a viable alternative in restoration treatment of patients with darkened teeth.

Natural teeth have also been used in prosthetic appliances with extremely satisfactory results.¹¹

The purpose of this report is to present a clinical case of oral rehabilitation, in a 5-year-old patient, using an anterior space maintainer prosthesis made with natural primary teeth, plus human enamel veneer restorations.

CASE REPORT

A five-year old patient, was referred to the Post graduate department of the Pediatric Dental Clinic at the University of São Paulo. The child had extensive carious lesions on the buccal surface of the two maxillary lateral incisors with high degree of darkening and the two central incisors were missing (Figure 1). Medical and dental histories were assessed, as well as clinical and radiographic examinations.

*Luciana Butini Oliveira, DDS, MSD, Graduate Student (Doctoral degree), Pediatric Dentistry, Department of Orthodontics and Pediatric Dentistry, University of São Paulo, São Paulo, Brazil.

**Tereza Keiko Tamay, DDS, Specialist in Pediatric Dentistry, University of São Paulo, São Paulo, Brazil.

***Marta Dutra Machado Oliveira, DDS, MSD, Assistant Professor of Pediatric Dental Clinic I and II at the Federal University of Santa Maria, Rio Grande do Sul, Brazil.

****Célia Regina Martins Delgado Rodrigues, DDS, MSD, PhD, Professor of Pediatric Dentistry, Department of Orthodontics and Pediatric Dentistry, University of São Paulo, São Paulo, Brazil.

*****Marcia Turolla Wanderley, DDS, MSD, PhD

Send all correspondence to: Dr. Luciana Butini Oliveira, Departamento de Ortodontia e Odontopediatria, Universidade de São Paulo, Faculdade de Odontologia, Av. Prof. Lineu Prestes, 2227, Cidade Universitária, São Paulo, SP, 05508-900 (Brazil)

Tel./Fax: +55 11 3091 7854

E-mail: lubutini@usp.br



Figure 1: Initial anterior view. Extensive carious lesions on the buccal surface of the two maxillary lateral incisors with high degree of darkening are observed. The two central incisors were missing.

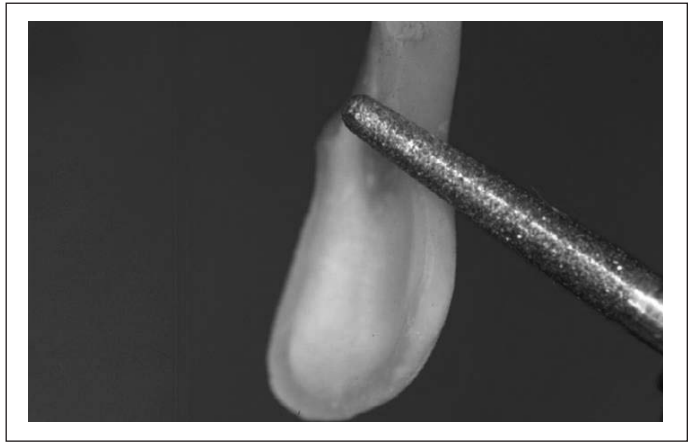


Figure 2: Cutting of tooth with conical-shaped diamond bur.

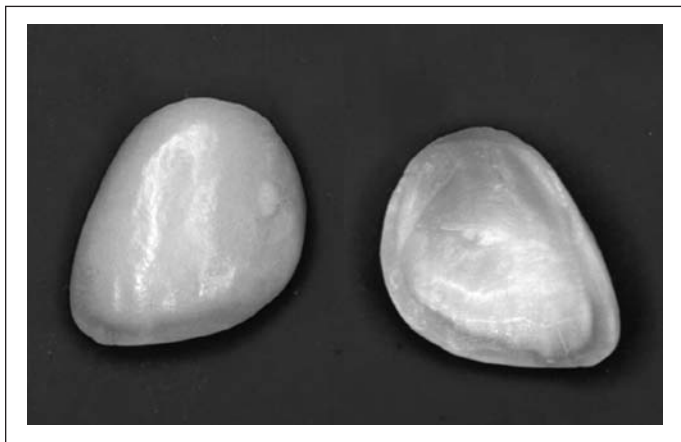


Figure 3: Final view of the human enamel veneer (facet).

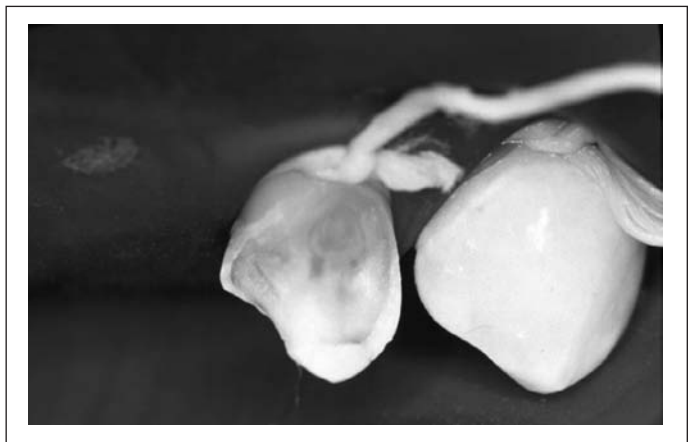


Figure 4: View after caries removal.

The technique chosen for the restoration of the maxillary lateral incisors were veneers constructed from natural crowns obtained at a Human Teeth Bank of the Pediatric Dental Department of São Paulo University. This Human Teeth Bank is registered, following the basic rules for organ donation, is monitored by the health authorities of the state of São Paulo and receives donations of exfoliated primary teeth from children. After the child's parents received information about this technique and all their doubts were answered, they signed a written consent for the use of natural teeth as part of their child's dental treatment.

CLINICAL PROCEDURES

Natural teeth from the Human Teeth Bank were chosen. These were selected taking into consideration patient's teeth color and anatomical form. The chosen teeth were autoclaved (121 °C for 30 minutes). Next, preparation of veneer from the natural tooth crowns was performed. For this, the lingual and root portions of the previously selected teeth were abraded using a diamond bur in at high-speed, cooled with air/water spray (Figures 2 and 3).

After anesthesia and rubber dam placement, caries removal was performed using a round bur at low-speed. Tooth preparation was limited to caries removal (Figure 4). Afterwards, the natural crown veneers were attached to a gutta-percha stick and placed over the

buccal surface of the formerly prepared lateral incisors to verify their adaptation. Following this, prophylaxis with pumice and water was performed, as well as etching technique on natural crown veneers and lateral incisors with a 37% phosphoric acid (3M/ESPE Dental Products), for 15 seconds. Next, a bonding system (Single Bond™, 3M) was also used on both, veneer and lateral incisors according to the manufacturer's instructions. Natural veneers were placed using light-cured composite resin (Z100, 3M). A dental probe was used to verify cervical margin adaptation. Following this, finishing, polishing, and occlusion adjustment were adjusted using diamond burs (KG Sorensen) (Figures 5 and 6).

In a next appointment, upper and lower dental impressions were taken in order to construct an esthetic and functional space maintainer. In this appliance, natural teeth from the Teeth Bank were used as well. Teeth from the Teeth Bank were once more selected, sterilized, adapted and placed in an acrylic space maintainer. The child received this prosthetic appliance on his next dental appointment, when trimming of the incisal surface of the left lateral incisor was performed (Figure 7).

The child and the parents were motivated to attend periodic appointments for prevention of caries in the posterior dentition. The importance of a proper dietary and oral hygiene habits was also emphasized.

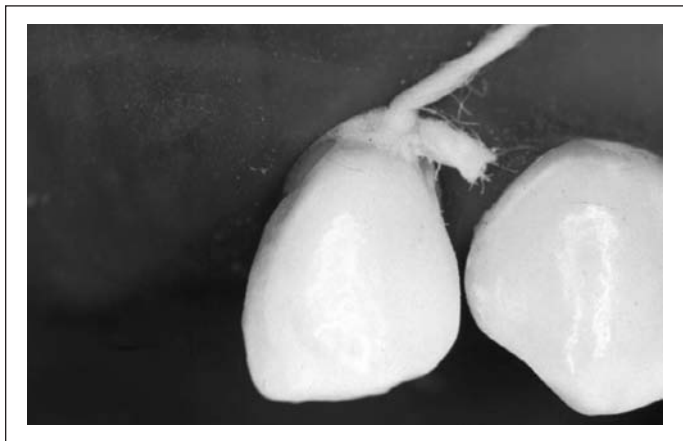


Figure 5: View of restoration on tooth 62 immediately after finishing.



Figure 6: Final aspect of restoration on teeth 52 and 62 which human enamel veneers were used.



Figure 7: Anterior view after installation of space maintainer (with natural teeth).

DISCUSSION

Many options exist to repair carious primary incisors. Operator preferences, esthetic demands by parents, the child's behavior and professional ability are variables which affect the decision and ultimate outcome of whatever restorative outcome is chosen.¹² To obtain esthetic satisfactory results, the pediatric dentist must be precise and meticulous in the technique of using composite resins and adhesive procedures. However, no existing restorative material in modern dentistry is able to substitute, in quality, color and resistance the human dental enamel.¹⁰ The use of human enamel veneer restoration is another alternative clinical technique to restore severely carious or fractured primary anterior teeth, reestablishing shape and esthetic. There are many advantages of using natural crown from a Teeth Bank when compared to restorative materials: Improved esthetics. Natural enamel has physiologic wear and offers superficial smoothness and cervical adaptation compatible with those of the surrounding teeth. The length of appointment can be reduced if the veneers are prepared previously. Furthermore, this technique eliminates laboratory processing, reducing costs.⁸ The disadvantages are the difficulty of obtaining teeth, the clinical characteristics of the existing teeth and the non-acceptance by some patients. The use of natural teeth as a restorative material can make this an impracticable tech-

nique by virtue of ethical issues. Parents or guardians must be informed about the treatment proposal and all their questions answered before a written consent is obtained. This technique has been employed when there is total or partial coronal destruction due to dental caries, trauma, or malformation and alteration in mineralization of dental tissues.

The restorative technique described in this case resulted in a clinical success as the patient recovered function and provided extremely favorable esthetics, as well patient's psychological and behavior development.

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