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Aesthetic-Functional Rehabilitation in a Pediatric Patient Associated with the Use of Fiberglass Pin

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ABSTRACT

A huge challenge for the dentist has been the functional and aesthetic reconstruction of endodontically treated teeth; prefabricated posts are a good alternative for the rehabilitation of teeth, as they are able to restore aesthetics and function. This work aims to report the aesthetic-functional rehabilitation of the tooth 24 in a pediatric patient, using a fiberglass post associated with a composite resin restoration. The patient, 12 years old, male, attended the dental clinic presenting as the main complaint the need for aesthetic-functional treatment in element 24 after the endodontic treatment. The treatment plan was established using composite resin associated with a fiberglass post for restoration sustainability. The patient's rehabilitation was satisfactory from the aesthetic-functional point of view and highlights the applicability of the fiberglass post in the dental clinic as an effective alternative in coronary restorative treatment.

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INTRODUCTION

Aesthetic appearance is one of the greatest demands of patients, which leads to a constant search for harmony, naturalness and expressiveness. Currently, restorative procedures have contributed considerably to the resolution of aesthetic problems [1]. In view of the most diverse restorative materials on the market, the most important thing is to know how to indicate and use them through clinical evaluation of the quantity and quality of the remaining dental structure, degree of discoloration, relationship between the affected area, biological distances, occlusion analysis and the degree of hygiene, as well as patient orientation [2].

Throughout the history of dentistry, a huge challenge for the dentist has been the functional and aesthetic reconstruction of endodontically treated dental elements [3]. Dental elements that underwent endodontic procedures, with the crown partially destroyed, may change the final result of the restoration since the basic requirements for retention, strength and stability of the preparations cannot be established [4]. In the last decades, fused intra-root retainers have been the most used to support root anchorage in rehabilitation of endodontically treated teeth, presenting a high rate of clinical success, due to their biocompatibility and physical properties, however, these retainers are manufactured indirectly in the laboratory, and do not present favorable aesthetic results for the patient, leading to a darkened appearance due to the color and opacity of the metal pin, being more evident in anterior teeth [5].

Prefabricated posts are a good alternative for the rehabilitation of teeth, as they are capable of returning aesthetics and function, in addition to having a good affinity for resin cements, resembling composite resins, which have a module of elasticity similar to the dentin [6]. This article aims to report the aesthetic-functional rehabilitation of the dental element 24 in a pediatric patient, using a fiberglass post associated with a composite resin restoration.

Case report

The present case report was authorized by the guardians of the patient involved in it. Patient, 12 years old, male, dark skinned, attended the dental clinic presenting as the main complaint the need for aesthetic-functional treatment in element 24 after the endodontic treatment. In the intraoral examination, extensive coronary destruction was partially sealed with temporary restorative material. (Obtur Refil, Maquira, Maringá, Paraná, Brazil)®. (Image1A). The periapical radiographic examination of the dental element 24 was performed, and it was observed that the filling material in the extension of the root canals was satisfactory, with no

need for retreatment. (Image1B). The treatment plan for element 24 was established using composite resin associated with a White Post DC Refil® fiberglass post (FGM, Joinville, Santa Catarina, Brazil) for the restoration sustainability.

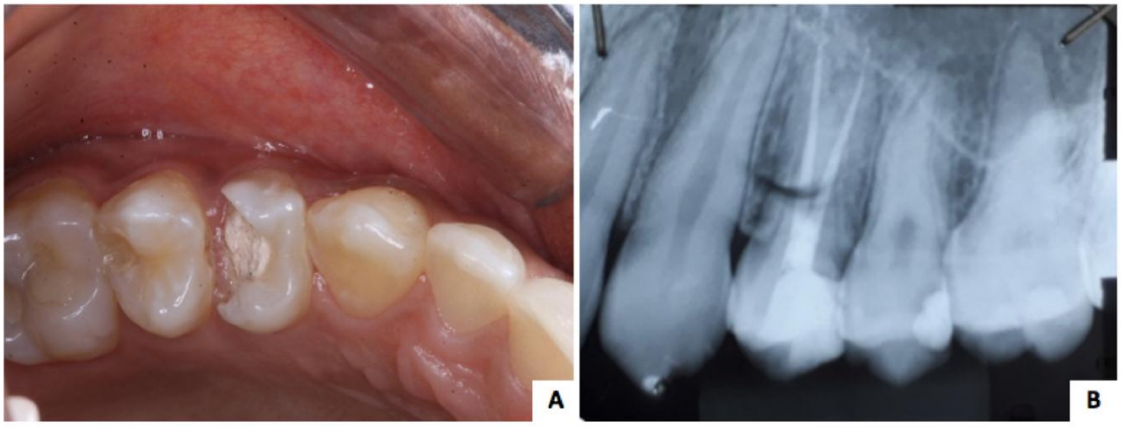

Image No. 1. A) Extensive coronary destruction of dental unit 24 partially sealed with temporary filling material. **B)** Periapical radiography of dental unit 24 showing satisfactory endodontic treatment, filled conduits and absence of periapical lesion.

Before absolute isolation (Image 2A), tooth prophylaxis was performed using prophylactic paste (Villevie, Joinville, Santa Catarina, Brazil) and pumice (SS White Duflex, Rio de Janeiro, Rio de Janeiro, Brazil) to choose the color of the composite resin to be used. The Vitapan Classical (VITA, Bad Säckingen, Baden-Württemberg, Germany) scale was used, the color EA2(Opallis, FGM, Joinville, Santa Catarina, Brazil) was selected for the enamel and the color DA3 (Opallis, FGM, Joinville, Santa Catarina, Brazil) was selected for the dentin.

Access to the vestibular-palatine canal was initiated with the #1014 spherical diamond bur to remove the sealing of the coronary portion (Image 2B). The White Post DC Refil® fiberglass post (FGM, Joinville, Santa catarina, Brazil), size 0.5 (Image 2C) was selected and adapted, and subsequently, the vestibular-palatine canal was radiographed to observe the adaptation of the post in the conduit. (Image2D). After adapting the White Post DC Refil® fiberglass post (FGM, Joinville, Santa Catarina, Brazil) into the conduit, dental unit 24 was prepared, with acid conditioning using 37% phosphoric acid (Dentsply Sirona, York, Pennsylvania, United States of America) and application of adhesive (3M, Saint Paul, Minnesota, United States of America) within the root canal and the remaining dental structure.

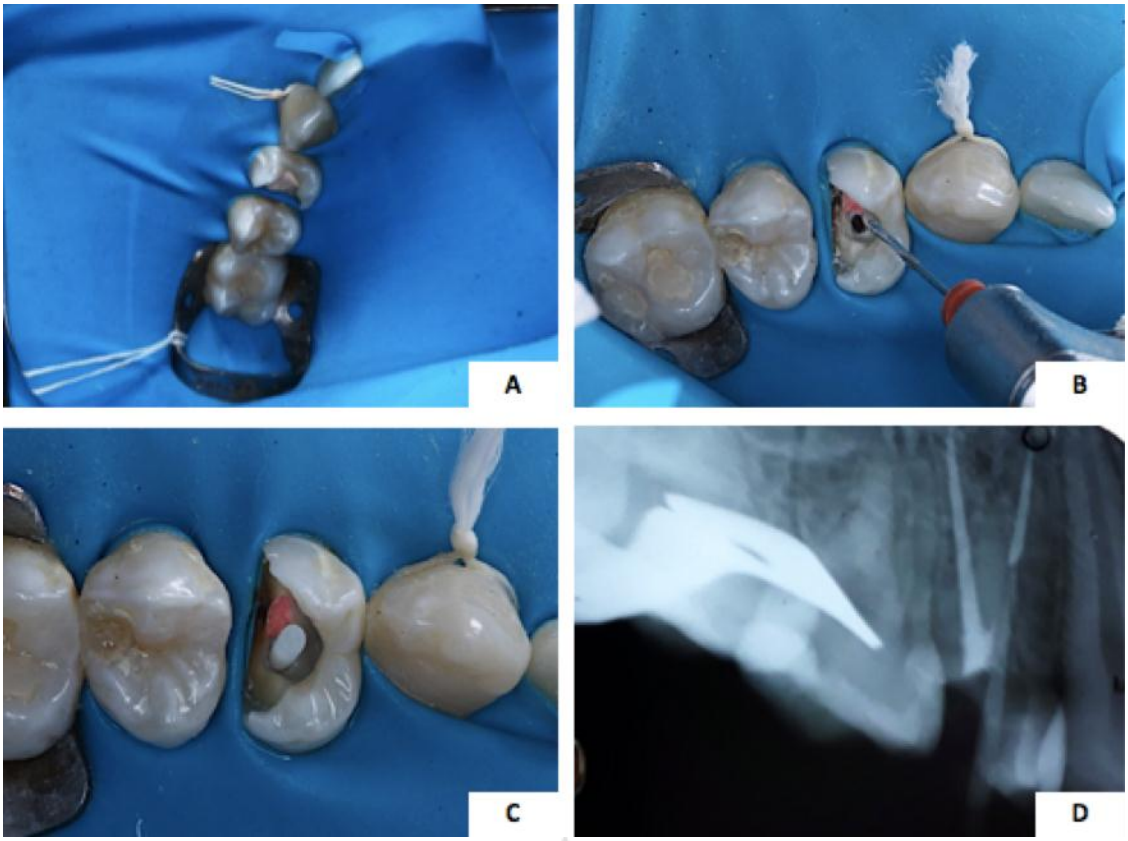

Image No. 2. A) Absolute isolation. **B)** Disobturation of the cervical portion of the vestibulo-palatine canal dental unit 24. **C)** Test of the post in the conduit. **D)** Periapical radiography, observing the good adaptation of the post in the root canal of unit 24.

For the preparation of the intra-root pin, 37% phosphoric acid (Dentsply Sirona, York, Pennsylvania, United States of America) and silane bonding agent (Dentsply Sirona, York, Pennsylvania, United States of America) were used. And later, the adhesive layer was applied (3M, Saint Paul, Minnesota, United States of America) with the photopolymerization of the fiberglass post. Then, the resin cement Allcem Core (FGM) was used for adhesion of the White Post DC Refil® fiberglass post (FGM, Joinville, Santa catarina, Brazil) and its clipping. For the final rehabilitation of dental unit 24, a direct restoration (class II, occlusal-distal) was made with composite resin color EA2 (Opallis, FGM, Joinville, Santa Catarina, Brazil) for enamel and DA3 (Opallis, FGM, Joinville, Santa Catarina, Brazil) for dentin (Image 3A). Finally, the occlusion was checked, which was satisfactory (Image 3B). The aesthetic-functional results derived from the use of the fiberglass post (FGM, Joinville, Santa catarina, Brazil) were considered satisfactory from the clinical point of view and also for the patient.

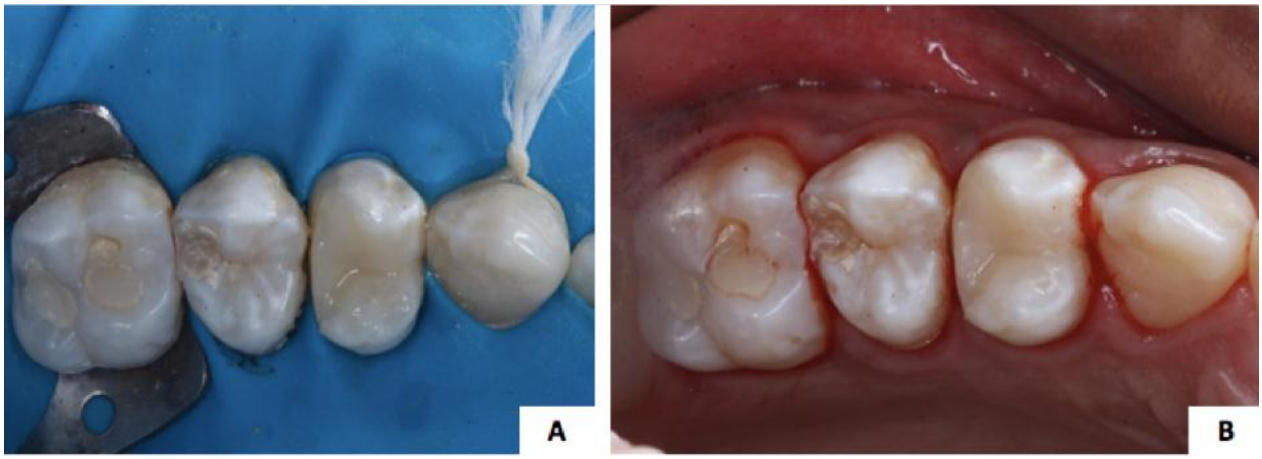

Image No. 3. A) Direct occlusal-distal restoration with composite resin on unit 24. **B)** Immediate appearance of unit 24 after satisfactory occlusion check.

DISCUSSION

The endodontic treatment currently performed leads to the decontamination of the infected or necrotic tissue present within the root canal, leading to a significant immediate improvement in the symptoms and clinical signs present [7]. Notwithstanding, such treatment provides impairment of dental structures, especially when the dental element already has extensive coronary destruction before the endodontic procedure [8]. In the present case, the patient had extensive coronary destruction caused by dental caries and had undergone endodontic treatment due to symptoms caused by the pulp lesion, indicating the use of an intra-radicular retainer to perform the aesthetic-functional rehabilitation of the tooth.

The metallic anchoring system also has a high modulus of elasticity, leading to a greater concentration of stress in the root canal leading to a greater risk of fracture of the remaining tooth structure. However, other physical-biological variables must be observed as disadvantages for the use of the metal post, such as the possibility of corrosion of the metal and difficulty of removal, if necessary [9]. Thus, the use of fiberglass posts is an alternative that provides favorable aesthetics, as well as relative durability and resistance in relation to the model mentioned above, although some variables must be evaluated by the dentist, such as morphology from the root of the element, location of the element and choice of restorative material, in the case described in this work the restorative material chosen was composite resin [10].

Among the main advantages of the fiberglass post are the modulus of elasticity, which is similar to natural dentin, providing good adhesion, aesthetics and minimal risk of fracture. It should be noted that in order to describe the diameter of the dentin, the diameter of the post must be minimized as much as possible, but it must be enough to effectively resist the functional forces that will be imposed against it daily [11]. It is also evidenced that the use of the fiberglass post means greater preservation of the remaining dental structure, as well as a more pleasant aesthetics mainly in anterior teeth, reduction of the total time of the procedure since it can be implanted in just one clinical session, different from the metallic counterpart, which requires two or more sessions for full implementation, in other words, greater clinical viability in general by the fiberglass post [12]. In the present case, it was decided to use the fiberglass post for the sustainability of the restoration, as recommended by the literature.

CONCLUSION

In the case described, the patient's rehabilitation was satisfactory from the esthetic-functional point of view and highlights the applicability of the fiberglass post in the dental clinic as an effective alternative in coronary restorative treatment. The use of this alternative shows a promising path in coronary restorative treatment, given the fact that it is a material with ideal biomechanical characteristics for the treated dental element, in addition to providing greater clinical viability through broad biocompatibility and less clinical time for the dentist, significantly increasing its cost-benefit ratio.

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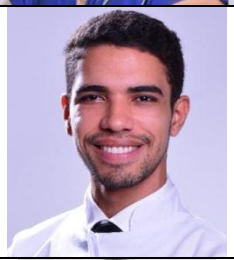	***Lucas Cavalcante de Sousa*** *Federal University of Rio Grande do Norte* *Department of Dentistry, Av. Sen. Salgado Filho, 1787 - Lagoa Nova, Natal - RN, 59056-000*
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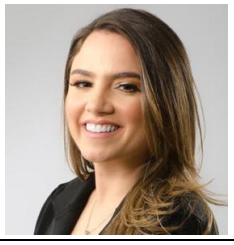	***Rafaella Bastos Leite*** *Federal University of Rio Grande do Norte* *Department of Dentistry, Av. Sen. Salgado Filho, 1787 - Lagoa Nova, Natal - RN, 59056-000*
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