

## Restoring Grossly Decayed Primary Incisors - Case Report

**Assist. Prof. Dr. Baydaa Ali Othman Al – Rawi**  
**BDS, MSc, PhD Pediatric Dentistry**

[baydaa.alrawi@yahoo.com](mailto:baydaa.alrawi@yahoo.com)

Ibn Sina University for Medical and Pharmaceutical  
Sciences - College of Dentistry – Baghdad - Iraq

**Dr. Noor Abdulrahman Ahmed**

**BDS**

[noor\\_rahman@yahoo.com](mailto:noor_rahman@yahoo.com)

Aliraqia University - College of Dentistry

**Abstract:** *The case report presented a 4-years-old male patient with severely decayed maxillary incisors teeth. After root canal treatment, the primary maxillary central and lateral incisors were reinforced using glass fiber reinforced composite resin short posts and restored using celluloid strip crowns. The technique described a simple and effective method for restoring severely decayed primary anterior teeth that reestablishes function, shape, and esthetics.*

**Keywords:** *Decayed, primary, teeth, post.*

### Introduction

Early childhood caries is a rampant dental disease that affects mostly young children. The American Academy of Pediatric Dentistry defines ECC “as the presence of 1 or more decayed, missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger” [1]. The early loss of

primary anterior teeth may result in reduced masticatory efficiency, loss of vertical dimension, development of parafunctional habits (tongue thrusting, speech problems), esthetic-functional problems such as malocclusion and space loss, and psychologic problems that can interfere in the personality and behavioral development of the child [2]. Restoring the primary anterior teeth to its previous function, form and esthetics presents a challenge to the Pediatric Dentist. Among restorative treatment options, a post and core is a dental restoration used to sufficiently build up tooth structure for future restoration with a crown when there is not enough tooth structure to properly retain the crown, due to loss of tooth structure to either decay or fracture. An anchor placed in the tooth root following a root canal to strengthen the tooth and help hold a crown in place [3].

In cases where teeth are severely decayed, endodontic treatment and placement of intracanal posts or retainers become necessary before crown restoration. Posts may be constructed of a variety of materials, including resin composite, metal, and biologic material [4]. In recent years, various types of fiber reinforcement have come into widespread use as an alternative to cast or prefabricated metal posts in the restoration of endodontically treated teeth [5]. The advantages of using reinforced fiber to construct an intracanal post include resin composite crown reinforcement, translucency, and relative ease of manipulation [6].

The purpose of this case report was to described the rehabilitation of carious primary maxillary incisors using glass fiber reinforced composite resin as an intracanal post for restoring grossly decayed primary incisors.

## **Materials and Methods**

A 4 years old, male patient reported to the Department of Pedodontics, Orthodontics and Preventive Dentistry, College of Dentistry, University of Mosul at 2011, with a chief complaint of decayed maxillary incisors teeth. The child's medical history was noncontributory. Clinical and radiographic examinations were

conducted to establish a treatment plan (Figures 1 and 2). The decision to restore the teeth using composite resin crowns with glass fiber-reinforced posts was based on the extensive damage that had occurred to the tooth structure. The treatment plan was explained to the child's parents, and their written consent was obtained before treatment.

Treatment was implemented in 2 phases, with root canal treatment performed in phase (1) and the construction of the restoration in phase (2). The teeth were anesthetized, gross carious lesions were removed with a no. 330 round carbide steel bur. Unsupported enamel was not removed so as to preserve as possible. The pulp chamber was opened and the working length of the canal was determined using a no. 15 K-file which was approximately (10 – 12 mm). Canals were prepared up to a no. 30 K-file using a step-back technique, irrigated with 2.5% sodium hypochlorite and dried with paper points. A thick mix of quick setting zinc oxide eugenol cement (SpofaDental, Romania) was then condensed into the canal. The obturated material was allowed to set for 10 minutes. The access cavity sealed with light cured glass-ionomer cement (Kavitan® LC, SpofaDental, Kerr, Holland) as temporary filling material.

The post space was prepared one week after the endodontic treatment was completed. The post space was created by removing approximately 4 mm of cement material using a thin straight fissure bur. All visible cement on the walls of the post space was removed. The prepared post space was then cleaned with saline. The canal was dried and the desired length of the post was measured (about 4mm according to recommendations) a glass ionomer cement button was putted after the removal of the intra canal filling material. The length of the fiber post placed intra canal and coronally is 8mm to 9mm. The canal was dried and the tooth structure was acid etched with 37% phosphoric acid (Etch-37 with BAC; Bisco, Schaumburg, IL, USA) for 15 sec. washed for 30 sec. and then gently air dried. A layer of bonding agent was applied (Ed Primer II A&B; Kuraray Medical, Tokyo, Japan) and cured as per manufacturer instructions. The glass fiber reinforced composite resin post (ITENA, France) was then cured for 20 seconds in order

to gain rigidity, before insertion into the post space. Flowable composite (Willmann & Pein GmbH, Humburg) is then inserted into the canal followed by placement of the glass fiber reinforced posts, excess was removed followed by light curing the post as per the manufacturer instruction. The coronal enamel was then etched for 20 seconds, rinsed with water and air dried followed by application of bonding agent—which was then light cured. The coronal post was then covered with the flowable composite for core build up, followed by light curing it for 60 seconds, and finally teeth were restored with composite (Tetric<sup>®</sup> N- Collection, USA). The final finishing and polishing was done with finishing burs. Occlusal interferences in normal and paranormal mandibular movements were removed. Figures (4) and (5) demonstrated final clinical and radiographical appearances [7].

After the restoration was completed, the patient and his parents were once again instructed on proper dietary and oral hygiene habits as well as the importance of periodic dental visits for the preservation of the primary dentition.

## Results and Discussion

The principal objective of pediatric operative dentistry is the restoration of damaged teeth to healthy function. To this end, endodontic techniques facilitate the maintenance of pulpally compromised primary teeth, reducing the potential for the unwanted sequel of their unplanned extraction [8].

The use of intracanal posts and cores enables more extensive reconstruction of destroyed anterior primary teeth to solve functional and esthetic problems without interfering with root resorption and to improve the retention of definitive restoration following endodontic treatment [9]. There are various materials available for this objective: prefabricated posts, metal posts, orthodontic wire posts, biologic posts, composite posts, and fiber-reinforced posts [10 - 14].

Prefabricated metal posts are fast, cheap, and easy to use [15], but they do not take into account the individual shape of the root canal, and their adaptation is not always ideal [16]. Although

metal posts with macro retention are indicated for the reinforcement of primary teeth that present with wide canals and little remaining dentin [10] because of their color metal posts do not meet the esthetic demands of direct resin composite restorations [11,13]. Moreover, the use of metal posts in primary teeth may pose problems during the course of natural exfoliation [11].

Composite resin posts provide satisfactory esthetics; however, there is a risk of a loss of retention owing to polymerization contraction [17].

In this case report, glass fiber reinforced composite resin as an intracanal post for restoring grossly decayed primary incisors. Follow up carried out over two years period, the crowns were demonstrated good retention and aesthetic results agreed with other authors [11,18], who mentioned that reinforced glass fiber post is a recently developed material reported to have clinical advantages over traditional post core material.

Compared with metal posts, the elasticity of reinforced fiber post is closer to that of dentin [7]. The use of reinforced fiber post as an intracanal post offers a solution that is both esthetic and simple [10] because restorations can be completed without a laboratory phase.

In this case report, reinforced glass fiber post was placed to fill only the cervical one-third of the canals because regardless of the type of post used, endodontically treated primary teeth should only be filled to approximately one-third of the root length to avoid interfering with the process of permanent tooth eruption [10, 11].

Resin-bonded composite strip crowns are the first choice of many clinicians for the restoration of primary incisors, mainly because of the superior esthetics and the ease of repair should the crown subsequently chip or fracture [17]. Glass fibers have been shown to adapt well to composite, facilitating crown reconstruction [10]. In the case presented here, the crown was restored using composite resin and a celluloid strip.

## Conclusions

This method of glass fiber reinforced composite resin post and core for restoring grossly decayed primary incisors has shown promising results and has presented the pediatric dental world with an additional treatment option.

## References

- [1 ] American Academy of Pediatric Dentistry, "Policy on Baby Bottle Tooth Decay", ECC. 2008.
- [2 ] Sholapurmath SM., Anand S., "Use of polyethylene fiber in pediatric esthetics clinical reports of two cases", *Journal of International Oral Health*, 2, 2, 99, 2010.
- [3 ] De Oliveira RR, Teixeira das NL., Regina MN, Turolla WM, Nahas Pires CMS, "Intracanal reinforcement fiber in pediatric dentistry: a case report", *Quintessence International*, 35, 263–268, 2004.
- [4 ] Mendes FM, De Benedetto MS, del Conte Zardetto CG, Wanderley MT, Correa MS "Resin composite restoration in primary anterior teeth using short-post technique and strip crowns: a case report", *Quintessence Int.*, 35, 689-692, 2004.
- [5 ] Qualtrough AJ, Mannocci F., "Tooth-colored post systems: a review", *Oper. Dent.*, 28, 86-91, 2003.
- [6 ] Rocha Rde O., das Neves LT, Marotti NR, Wanderley MT, Corrêa MS, "Intracanal reinforcement fiber in pediatric dentistry: a case report", *Quintessence Int.*, 35, 263-268, 2004.
- [7 ] Camp JH, Barrett EJ, Pulver F., "Pediatric endodontics: endodontic treatment for the primary and permanent dentition", in Cohen S. Burns, RC. "Pathways of the pulp", St. Louis: Mosby, P. 797-844, 2002.
- [8 ] Hunter ML, Hunter B., "Vital pulpotomy in the primary dentition: attitudes and practices of specialists in pediatric dentistry practicing in the United Kingdom", *Int. J. Paediatric Dent.*, 13, 246-250, 2003.

- [9 ] Ferreira MC, Kummer TR, Vieira RS, Calvo MC., "Short resin-posts bonding to primary dentin. Microleakage and micro-morphological in vitro study" J. Clin. Pediatric Dent., 31, 202-206, 2007.
- [10 ] Viera CL, Ribeiro CC "Polyethylene fiber tape used as a post and core in decayed primary anterior teeth: a treatment option", J. Clin. Pediatric Dent., 26, 1-4, 2001.
- [11 ] Motisuki C., Santos-Pinto L., Giro EM, "Restoration of severely decayed primary incisors using indirect composite resin restoration technique", Int. J. Paediatric Dent.,15, 282-286, 2005.
- [12 ] Ramires-Romito AC, Wanderley MT, Oliveira MD, Imperato JC, Corrêa MS, "Biologic restoration of primary anterior teeth", Quintessence Int.,31, 405-411, 2000.
- [13 ] Grandini S, Goracci C, Tay FR, Grandini R, Ferrari M., "Clinical evaluation of the use of fiber posts and direct resin restorations for endodontically treated teeth", Int. J. Prosthodont.18, 399-404, 2005.
- [14 ] Mortada A., King NM., "A simplified technique for the restoration of severely mutilated primary anterior teeth", J. Clin. Pediatric Dent, 28, 187-192, 2004.
- [15 ] Kern SB, von Fraunhofer JA, Mueninghoff LA, "An in vitro comparison of two dowel and core techniques for endodontically treated molars", J. Prosth. Dent., 51, 509-514, 1984.
- [16 ] Chan FW, Harcourt JK, Brockhurst PJ, "The effect of post adaptation in the root canal on retention of posts cemented with various cements", Aust. Dent. J., 38, 39-45, 1993.
- [17 ] Ram D, Fuks A.B., "Clinical performance of resin-bonded composite strip crowns in primary incisors: a retrospective study" Int. J. Paediatric Dent., 16, 49-54, 2006.
- [18 ] Qualtrough AJ, Mannocci F "Tooth-colored post systems: a review" Oper. Dent., 28, 86-91, 2003.



*Figure (1): Initial Intraoral Appearance of Severely Decayed Primary Anterior Teeth.*



*Figure (2): Initial Radiographic Appearance of Severely Decayed Primary Anterior Teeth.*



*Figure (3): Glass Fiber after Condensation inside the Primary Incisor Canal.*



*Figure (4): Final Appearance after the Reconstruction of Severely Decayed Primary Anterior Teeth.*



*Figure (5): Final Radiograph Showing Endodontic Treatment, Ribbon Short Posts, and Restored Primary Anterior Teeth.*

## ترميم القواطع اللبنية شديدة التسوس - تقرير حالة

أ.م.د. بيداء علي عثمان الراوي

[baydaa.alrawi@yahoo.com](mailto:baydaa.alrawi@yahoo.com)

جامعة ابن سينا للعلوم الطبية والصيدلانية - كلية طب الأسنان

د. نور عبد الرحمن أحمد

[noor\\_rahman@yahoo.com](mailto:noor_rahman@yahoo.com)

الجامعة العراقية - كلية طب الأسنان

### المستخلص:

تقرير الحالة يوضح ولد بعمر 4 سنوات لديه القواطع اللبنية العلوية شديدة التسوس. بعد علاج قناة الجذر للقواطع اللبنية الوسطى العلوية والجانبية تم تعزيز استخدام الألياف الزجاجية ومن ثم المركب الراتنج و باستخدام التيجان السليلوزية. ووصفت هذه التقنية وسيلة بسيطة وفعالة لاستعادة الأسنان الأمامية اللبنية شديدة التسوس التي استعادت الوظيفة، والشكل، والجماليات.

الكلمات الرئيسية: تسوس، لبنية، أسنان، مركز.