



Esthetic Rehabilitation of Early Childhood Caries: A Case report

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Abstract

Aesthetic dentistry plays a significant role not only in adults but also in pediatric patients. However, a pediatric dentist is faced with the dual problem of satisfying the aesthetic expectations of the patient and parents as well as managing the pediatric patient. In the present era, there are numerous restorative techniques that can be applied to different clinical scenarios. However, we have to choose the technique that best suits our patient, not only biologically but also aesthetically, psychologically, functionally, and financially. Following paper presents the clinical sequence of rehabilitation of severely carious maxillary anterior teeth from left to right lateral incisors in a child with early childhood caries. Severely carious anterior teeth were endodontically treated. Incisors were restored with glass fiber posts which is mainly used for pediatric patients in endodontically treated teeth followed by strip crown with composite restoration placement.

Keywords: Aesthetic Dentistry; Early Childhood Caries; Glass fiber post; Celluloid strip crowns

Introduction

Early childhood caries is an infectious disease of the primary teeth in children which if not intervened at an early stage can lead to severe destruction of the teeth not only in the primary dentition but can also affect their successors [1]. In spite of the increasing awareness among parents about dental caries and its ill effects, we are frequently faced with situations when we need to extract the teeth with its imminent consequences. The concept of parents insisting for extraction of an extensively decayed tooth of their child has become obsolete. There has been a paradigm shift in the attitude of parents wherein a good portion of the society is more determined to maintain the primary teeth in the oral cavity of their children for as long as they should naturally last. This expectation of the parents cannot be denied, and the final outcome is that more teeth are being restored than used to be during the last century. Not surprisingly, there are diverse techniques and materials [2] that are being used to maintain the primary teeth in the oral cavity of children in a healthy condition. It is the responsibility of the pediatric dentist to choose the technique and the material that best suit the patient's condition. Pediatric dentists have to face the dual challenge of restoring severely decayed teeth at the same time managing the behaviour of the child because children are among the youngest and the least adaptable groups of patients. In addition to management problems, there are a number of procedural problems that need to be addressed while restoring primary incisors. Their crowns are short and narrow, while the pulp chamber is large with respect to the size of the crown [3]. In pulpectomised primary anterior teeth where the entire crown

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is destroyed by the carious process, only a small amount of the tooth structure is available for bonding. Enamel, if and when present, is also less amenable to acid etching than the permanent teeth because of more aprismatic enamel [4]. In many cases, the entire coronal structure is destroyed, sparing only the root and hence only dentine to bond to the restorative materials. Not surprisingly, in the past, and often even now, many of these teeth are extracted [5]. The following paper elaborates the clinical sequence of rehabilitation of severely mutilated maxillary anterior teeth from left to right lateral incisors in a child with early childhood caries.

Case Report

A six-year-old male patient reported along with his parents to the Department of Pediatric and Preventive Dentistry with a chief complaint of decayed teeth in the upper front region since many months. His medical history was not significant. On intraoral examination, he was found to have several carious lesions with grossly decayed 52, 51, 61, and 62 (Figures 1 and 2), deep dental caries in 54, 64, 74, 84 and Dentinal caries with respect to 55, 53, 63, 65, 75, 73, 72, 71, 81, 82, 83, 85. However, the radiographs of the maxillary anterior teeth revealed good root length of these teeth (Figure 3). Hence, it was planned to restore the maxillary anterior teeth by performing pulpectomy followed by the post and core. Parents were informed, and a written consent was obtained.

Clinical Procedure

- (i) Pulpectomy treatment with maxillary central and lateral incisors were performed and obturated with Metapex.
- (ii) Space was created for the intracanal post by removing Metapex from canals (coronal 4-6mm) with thin spoon excavator and No. 4 Gates Glidden drill with slow contra-angle handpiece without water spray wrt 52, 51, 61, 62.
- (iii) Intracanal etchant was applied for 30 seconds According to manufacturer's guideline, rinsed and dried for 15 seconds. Bonding agent applied and cured for 20 seconds.
- (iv) 1mm flowable composite (Ivoclar, Vivadent) placed into the intracanal space over the root canal filling material.
- (v) Glass fiber post (Hi-Rem Post, Easy removal Fiber Post, Over Fibers) measured, etched, rinsed, dried. Bonding agent applied and cured for 20 seconds and placed into the root canal upto 3-4mm (Figures 4 and 5)
- (vi) Post system placed into the root canal using flowable composite. Shade matched packable composite (Ivoclar, Vivadent) placed over post as composite buttons.
- (vii) Core buttons etched, rinsed and dried for 15min followed by bonding agent application. (Figure 6)
- (viii) Celluloid Strip crowns (Unitek Strip Crown, 3M

ESPE) selected and lingual surface punched. 2/3rd filled with flowable composite and pressed over post. Figure 7)

- (ix) Composite curing done for 20 seconds and strip crowns removed.
- (x) Occlusal interferences were checked with an articulating paper, and occlusion was restored. Restorations were finished and polished. (Figures 8 and 9)
- (xi) 54, 64 was pulpectomised and restored with a Zirconia crown (Kids-e-Dental preformed anterior crowns).
- (xii) 55, 53, 63, 65, 74, 75, 72, 71, 81, 82, 84 and 85 were restored with glass ionomer cement (high-strength



Figure 1: Pre-operative frontal view



Figure 2: Pre-operative maxillary view



Figure 3: Pre-operative RVG wrt 52, 51, 61, 62

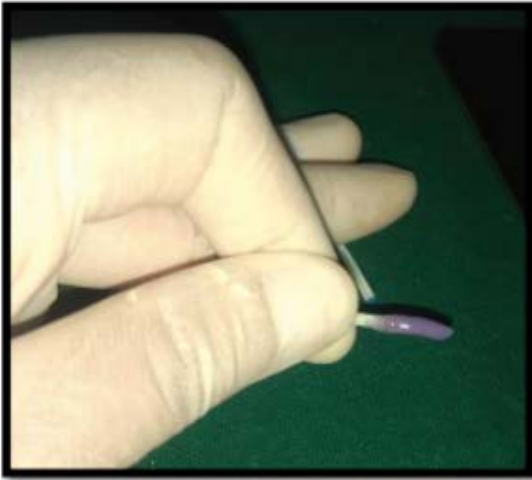


Figure 4: Glass fiber post preparation



Figure 5: Glass fiber post cemented



Figure 6: Composite buttons etched



Figure 7: Celluloid strip crown selected



Figure 8: Postoperative frontal view



Figure 9: Postoperative occlusal view

posterior restorative, GC Corporation, Tokyo, Japan). (Figures 8 and 9)

Discussion

The purpose of restoring carious primary incisors is to allow the patient retain these teeth until natural exfoliation. The choice of restoration materials used includes glass ionomer cements (GICs), compomers and composite resins. The bonded resin composite strip crown technique has been used to restore primary incisors with extensive and multisurface decay for over 30 years [11,13]. Despite this, there are few studies evaluating its clinical performance. Some of them revealed high esthetic results and acceptable durability over time [14,15]. Children of today are very conscious of their appearance. Both of these patients, though very young were aware of their smiles. They refused to smile even when asked to and their parents complained that the girls wouldn't smile even in school as they felt their smile was not healthy because of teeth. Carious anterior teeth are not only esthetically unpleasant; they also lead to inferiority complex development right from early stages in life. No child should go through this. Strip crowns are a very affordable method of restoring beautiful confident smiles in children where Zirconia crowns are not feasible.

The technique proves simple to use by dentists, provides great parent and patient satisfaction due to very good esthetics and it is easy to repair in case of breakdowns. The time for

restoration placement is reasonable and the cost of materials (strip crown kit) is affordable. However, it may be easily fractured by trauma/traumatic occlusion, it is technique-sensitive, requires good tooth isolation from moisture, needs adequate tooth structure for retention and also patient cooperation [10,11].

In the results of a study conducted by Kupietzky et al. [14] who assessed 112 strip crown composite restoration placed in 40 children, after a period of 18 months, reported an 88% overall retention rate, with only 12% of restorations losing some resin material, and none of the restorations being totally lost. Ram D [15], evaluating the longevity of strip crown restorations in primary incisors after a 24-months period of follow-up reported a success rate of over 80%. Dhillon et al. [16] while assessing the clinical performance of 26 restorations of primary incisors by means of the strip crown technique, obtained a success rate of 80.8% after one year of follow-up.

Eshghi A, et al [17] treated 161 compromised primary maxillary incisors with 53 composite post restorations, 54 fiber post restorations and 54 reversed post restorations. After root canal preparation and post cementation, the tooth crown was reconstructed with composite resin and celluloid crowns (the strip crown technique). After one year of follow-up, 136 teeth were available for assessment. The retention rates of the restorations after one year were: 100% for the reverse post technique, 97.83% for fiber post and 97.73% for composite post. Walia T et al. [18] compared the clinical outcomes of composite strip crowns, pre-veneered stainless steel crowns (SSCs) and pre-fabricated primary Zirconia crowns in restoring 129 carious and traumatized primary maxillary incisors. The evaluation was made after 6 months and showed a retention rate of 100% for Zirconia crowns, 95% for SSCs and 78% for strip crowns. Duhan H et al. [19] assessed the clinical performance of four different types of restorations: composite, strip crown, biological and composite with stainless steel band. A total of 52 primary frontal teeth were treated by these means. The check-up periods were 3, 6 and 9 months after treatment. Loss of retention was seen in composite restorations and composite restorations with stainless steel band after 3 months. After 6 months, retention loss was seen in all restoration types, except for strip crowns, in which loss was seen after 9 months.

Conclusion

The importance of retaining the primary anterior teeth till their natural exfoliation time cannot be overemphasized. It plays a pivotal role in maintaining esthetics, development of speech, and building up of a confident individual. Restoring temporary incisors by means of strip crowns is easy to perform even with little tissue remaining after preparations and provides good aesthetic results. However, long-term

clinical studies are needed to investigate the advantages and disadvantages of this technique, and evaluate the clinical success and failure of restorations.

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