

Functional and Esthetic Rehabilitation during Deciduous Dentition Stage: A Case Report

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ABSTRACT

A virtual absence of palliative, preventive and restorative care characterizes juvenile oral health care in most of the developing and underdeveloped countries. Consequently, carious cavities remain untreated, which leads to pain, discomfort and functional limitation. It further, impacts negatively upon general health and cognitive development apart from causing decreased masticatory efficiency, difficulty in speech, compromised esthetics, development of abnormal tongue habits and subsequent malocclusion and psychological problems. The restoration of severely decayed deciduous teeth especially anterior ones presents a major challenge to dentists, particularly in uncooperative children. The following case report documents the restoration of severely mutilated deciduous teeth in an emotionally immature patient resulting in an improvement in not only his oral and general health also in helping him gain more self-confidence.

Keywords: Dental Caries, Early childhood Caries, Dental restoration.

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Introduction

Worldwide, the contribution of dental caries to the burden of oral diseases is about 10 times higher than that of periodontal disease, the other common oral condition.¹ Owing to its globally high prevalence, dental caries in children has been described as a 'pandemic' disease characterized by a high percentage of untreated carious cavities causing pain, discomfort and functional limitations.² Untreated carious cavities, furthermore, have a significant impact on the general health of children and on the social and economic wellbeing of communities³ and are more common in developing, than in developed countries.⁴

A particularly virulent form of dental caries is early childhood caries (ECC) is observed in children less than 71 months of age.⁵ It is characterized by an overwhelming infectious challenge and is associated with unusual dietary practices. ECC initially presents with smooth-surface carious lesions affecting the primary maxillary incisors (PMIs). As the disease progresses, decay appears

on the occlusal surfaces of the primary maxillary first molars, with subsequent spread to other primary teeth, resulting in the eventual destruction of the primary dentition.⁵

ECC is a public health problem that continues to affect babies and preschool children worldwide. A comprehensive review of the epidemiology of ECC showed that its prevalence varies from population to population; however, disadvantaged children, regardless of race, ethnicity or culture, are most vulnerable.⁶

ECC commonly leads to damaged, discolored or missing teeth. Such children sometimes have problems with self-esteem. Children are most afraid of losing face, and being thought of as unattractive or stupid especially by their peers. These fears are based in the child's perception of how he or she should be compared with peers on appearance, particularly on facial appearance. The esthetic rehabilitation of deciduous anterior teeth has an important psychological impact on recovery of

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patient's self-esteem.⁷

Full mouth rehabilitation including the esthetic restoration of severely mutilated primary anterior teeth has always been a challenge for the dentist for a long time, not only because of the limitations of the available materials and techniques but also because the children who require such restorations are usually among the youngest and least manageable group of patients. The current standard of care for treatment of ECC usually necessitates general anesthesia, with all of its potential complications, because the level of cooperative behavior of babies and preschool children is less than ideal. A 1994 report indicated that the cost of treating a child with ECC exceeded US\$ 2,000.⁸ More recent data have shown that costs have escalated.⁹

Thus, this disease places a huge burden on third-party payers (insurance companies and government medical welfare agencies), as well as on parents who are least likely able to afford it.

The presented case report describes the task of treating an emotionally immature patient suffering from early childhood caries presenting with multiple mutilated teeth. The patient had a Frankel behavior with definitely negative rating, but was managed using only voice control and other non-pharmacological behavior management techniques. The patient was dealt with an extra ordinary amount of patience and hence required multiple sittings. At the end of treatment, the patient walked out of the operatory room not only with his oral problems solved also as a stronger and more confident individual with a positive attitude towards dental treatment developed for life.

Case Report

A 4-year-old male patient reported to the department of pediatric dentistry (M.M. College of Dental Sciences and Research, Ambala, Haryana, India) with a complaint of pain in multiple severely decayed teeth. The patient was emotionally immature and highly uncooperative. Intraoral examination revealed multiple carious lesions, with 55, 53, 52, 51, 61, 62, 63, 64, 65, 71, 73, 74, 75, 81 and 84 showing pulp involvement and crown portions were grossly destructed (Figure 1).

It was decided to extract 55, 65, 71 and 81; and pulpectomy was advocated to the other teeth with carious lesions. Omega wire custom post and core followed by composite (strip crown) restoration was

planned for 53, 52, 51, 61, 62 and 63. The posterior teeth (64, 74, 75 and 84) were to be restored with stainless steel crowns. For the 55 and 65 spaces, a fixed space maintainer was planned.

Treatment was carried out in multiple sittings extending over a period of one year as the patient was irregular in keeping appointments. In the anterior maxillary teeth, pulpectomy was followed by placement of custom-made omega wire posts and composite restoration using strip crowns. For core build up in deciduous anterior teeth, about 4 mm of root canal filling material (Metapex™, Meta Dental Corp, Glendale, NY) was removed from the coronal end of the root canal, and 1 mm of glass ionomer cement (GC Fuji IX GP, GC Co. Newport Pagnell, UK) was placed. A 0.7 mm stainless steel orthodontic wire (K. C. Smith Monmouth Ltd., UK) was bent using No. 130 orthodontic pliers into an omega loop to allow the ends to be engaged at the entrance of the root canal. The incisal end of the loop of the wire projected 2-3 mm above the remaining structure. The loop was inserted into the canal with composite resin material (Filtek™ Z250, 3M ESPE, St. Paul, MN, USA.). The composite was light cured for 40 seconds. This provided good mechanical retention and support for the restorative material. Strip crowns (3M ESPE) were used to reconstruct the coronal structure.

The occlusion was checked and final finishing and polishing of the restoration was performed using Sof-Lex™ disks (3M ESPE). The pulps of treated posterior teeth were followed by a stainless steel crowns (3M ESPE). A transpalatal space maintainer was cemented by glass ionomer luting agent (Fuji I, GC Co.) for maintenance of 55 and 65 spaces. Transpalatal space maintainer was preferred to Nance space maintainer because of the patient's high caries index and inability to maintain oral hygiene. The possibility of use of a removable space maintainer was overruled because of the emotional immaturity of the patient.

The extraction of 71 and 81 teeth led to accelerated eruption of 31 and 41 teeth into the correct occlusion. After completion of the procedure, post-operative photographs and radiographs were taken (Figures 2 and 3). Home care instructions, including oral hygiene measures and diet counseling, were given to the parents. Recall checkup was scheduled every 6 months to assess the maintenance.

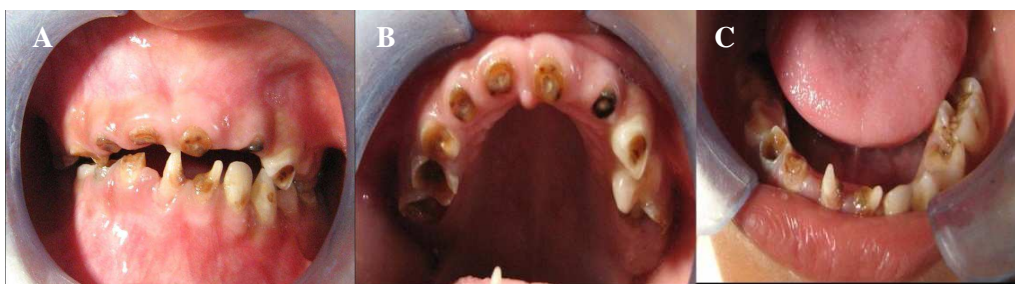


Figure 1. (A) Preoperative view of the patient. (B) Maxillary arch. (C) Mandibular arch.

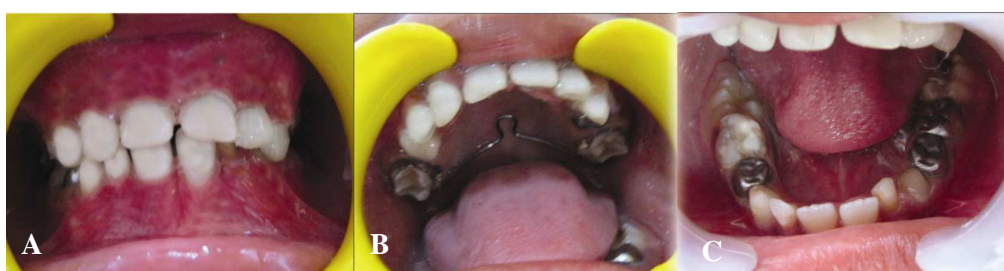


Figure 2. (A) Post treatment view of the patient. (B) Maxillary arch. (C) Mandibular arch.

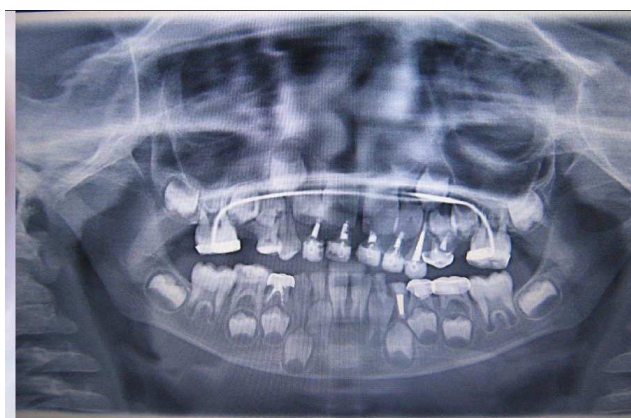


Figure 3. Radiographic view of the patient.

Discussion

Dental treatment of immature uncooperative children has always been a challenge. General anesthesia is used for such children, but is an expensive alternative. It is also associated with adverse events and unpleasant side effects. An important consideration for children who are unable to cooperate due to fear, anxiety or young age is their subsequent acceptance of care using other methods with low risk and low impact as general anesthesia does not shape the be-

havior of a child.¹⁰ Therefore, in the presented case an effort was made by the authors to manage the patient without anesthesia or sedation.

In the presented case, custom-made posts were used in anterior teeth; other available options such as nickel-chromium cast posts, preformed and cast metal posts were not considered because of the cost. The use of metal posts needs the use of an opaque resin to mask the unaesthetic post. It also poses additional problems during the course of natural exfoliation.¹¹

Available literature shows that intra-canal retention in primary teeth can be obtained by directly building resin composite posts or preparing an "inverted mushroom-shaped" undercut in the root canal prior to the buildup of the resin.¹² However, resin composite posts have low strength of loading. Previous studies concluded that fiber reinforced composite resin posts show higher strength, retention and marginal adaptation.¹³ However, the high cost of glass fiber reinforced composite resin post limits its use. Considering the socioeconomic status of the patient, a custom-made post using an orthodontic wire followed by strip crowns was used. Literature reveals that this achieves satisfactory results in a child patient.^{14,15} However, it is technique sensitive and requires parent's cooperation. Also, there is a chance of loss of restoration due to trauma or biting on hard food, so the parents were instructed to teach the child to avoid hard food.

The patient was very happy and satisfied with the functional and esthetic results, mastication, speech, cosmetic function, etc. Restorations were found to be serving well at the 1 year recall appointment.

In this study, authors take the view that full-mouth rehabilitation without general anesthesia can enable children to cope with future dental care and leave them in a position where they may be more amenable to dental care. A child benefits from oral rehabilitation in more than one way. Apart from the dental benefits, oral rehabilitation also contributes towards the improvement of general and psychological well being of the patient as was observed in the presented case.

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