

**Esthetic Smile Rehabilitation of severely decayed Primary incisors: A Case Report**

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**Abstract**

Early childhood caries (ECC) lead to premature loss or severe destruction of upper primary anterior teeth which pose a serious challenge for the pediatric dentist. Esthetics is an important concern in the anterior region along with function and space management. Therefore, tooth rehabilitation in this region becomes fundamental. The purpose of this report was to present a case of a 4-year-old child with multiple decayed upper front teeth. The teeth were endodontically restored using fiber post followed by strip crowns. The final result re-established local, systemic, psychological, aesthetic, and social problems of the child.

**Keywords:** Early childhood caries, Glass fibre post, Strip crowns

**Introduction**

Oral health represents an important component of the general health of a child which can lead to alterations in the child’s general health status and development thereby affecting the quality of life. A common occurrence in children under 6-years-old is the premature loss and severe destruction of primary teeth due to caries known as Early Childhood Caries (ECC). This particular type of dental caries has been defined by the American Academy of Pediatric Dentistry as “the

presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger”.<sup>11</sup> Serious local, systemic, psychological, aesthetic and social problems could be resulted if the progression of the caries condition is not interrupted.<sup>12</sup>

To restore severely destroyed primary maxillary incisors by early childhood caries is a challenge for pediatric dentists, due to child behavior and age. Various esthetic options are available for restoring or replacing it and it all depends on the clinician to make the best decision for each individual situation. Moreover, the rehabilitation should provide good longevity, without interfering with the normal eruption process.<sup>13</sup>

ECC represents an aggressive form of dental caries, where the teeth are affected in their order of eruption. It first develops on teeth surfaces such as the labial surfaces of maxillary incisors subsequently affecting the occlusal surfaces of the upper and lower molars. In the initial clinical aspect of ECC a white spot lesion is noticeable on the smooth surfaces of teeth. In this phase, the enamel is intact but demineralized. If left untreated, the lesion progresses into dentin, followed by

cavitation. The tooth crown is subsequently destroyed, triggering dental pulp inflammation, necrosis with painful symptomatology.

The associated risk factors include bottle feeding during night (with cariogenic liquids), prolonged breastfeeding, poor oral hygiene, use of non-fluoride toothpastes, low level of parental education and poor socio-economic status.

Depending upon the stage of the disease, various treatment options are available. Tooth restoration options include dental fillings and full tooth coverage by the placement of tooth crowns.

The high demand for esthetic restorations of front teeth has led to the development of various types of dental crowns such as open faced steel crowns, resin (composite) strip crowns, pre-veneered steel crowns and Zirconia crowns. Strip crowns are thin, transparent, celluloid preformed crowns. They are removed from the tooth after the restorative material has set (at the end of the procedure).

This article reports a case of an esthetic rehabilitation of maxillary primary anterior teeth of a 4-year-old patient with ECC treated at Dasmesh Institute of Research and Dental Sciences, Faridkot.

### **Case Report**

A 4 year old male child, accompanied by his mother with the complaint of multiple decayed teeth in the upper front tooth region for a period of three months. The patient's mother complained that the child had spontaneous pain from eating and brushing. She reported that the patient had the habit of eating sugary foods throughout the day.

Intra oral examination revealed multiple caries lesion with pulp involvement in 52, 61, 62 (figure 1). No significant past medical or dental history was reported. Fluoride dentifrice was being used since the patient was

two years of age. The treatment plan was explained to the patient's mother, who signed an approved informed consent form authorising the treatment as well as disclosure and publishing of this case report. Based on the extensive damage to the tooth structure, the decision to restore the teeth using strip crowns with glass fibre reinforced composite resin posts was made. Diagnostic orthopantomogram was taken (figure 2). Treatment was done in two stages where stage 1 includes the endodontic treatment and stage two was the restoration part. Initially, gross carious lesions were removed with a no. 330 round carbide steel bur. Access opening followed by working length determination was done. After cleaning and shaping of the canal, they were dried using paper points. Then obturation was done using Metapex till the apical closure and intraoral periapical radiograph was taken (figure 3). The access opening was sealed by Glass ionomer cement. The patient was scheduled for his final coronal restoration after 1 week. For the placement of the fiber post space was created in the obturated canals upto 2–3 mm using thin straight fissure bur with high-speed airtorator. A trial fit of the post (Glass Fiber Post, 3M, ESPE) was done into the canals to check the proper fit (figure 4). The teeth were dried and isolated with cotton rolls. Thirty-seven percentage phosphoric acid was applied on the root canal walls using applicator with a thin tip and etched for 15 seconds, washed and dried. The dentin bonding agent was applied using a microbrush and then gently air-dried to evaporate the solvent and cured. The glass fiber post of predetermined thickness and length was placed to a distance of 3 mm into the canal and 2 mm outside the canal along with luting resin and cured for 40 s using a light emitting diode curing unit (figure 5). Crown structure was reconstructed using composite resin around the post

with the help of celluloid strip crowns with a mesiodistal incisal width equal to the tooth to be restored by placing the incisal edge of the crown against the incisal edge of the tooth. The composite shade A2 was selected for better esthetics. The selected crown form was trimmed at a cervical level with crown and bridge scissors to remove excess crown material. A small hole was created by punching the strip crown with a sharp explorer at the incisal edge or palatal surface allowing excess composite to flow. The strip crown was filled with the selected material and seated on the tooth and checked for correct position; the excess material from the gingival area was removed; the composite material was light cured through the celluloid strip crown; the celluloid crown form was first removed and the occlusion was checked. Finally the teeth were finished with carbide finishing burs and composite polishing discs (figure 6).

The patient and the parents were satisfied with the final results. Postoperative orthopantomogram was taken (figure 7). After the procedure, instructions regarding proper diet intake and oral hygiene maintenance were very well explained to the patient and the parents. In the first follow up visit, the facial expression of the patient was remarkable, the change in the self-esteem was evident (figure 8).



Figure 1: Preoperative intraoral photograph of the patient



Figure 2: Pre-operative Orthopantomogram



Figure 3: Post obturation radiograph



Figure 4: Checking of strip crown fit



Figure 5: Placement of fiber post



Figure 6: Post operative clinical Photograph



Figure 7: Post-operative orthopantomogram



Figure 8: Follow up

## Discussion

The primary incisors are lost most commonly at the age of 2 to 4 years, because of ECC and/or trauma.<sup>1</sup> The lost at this phase may result in psychological disturbances and affect the child self-esteem and socialization during an important phase of development, especially if these defects are visible during speech and laughter.<sup>2,1</sup>

The aetiology of ECC is complex and involves interactions between social, behavioral and microbiological factors.<sup>3</sup> Moreover, the literature shows that the socioeconomic level of the family, such as low parental education and low monthly family income, are associated with the etiology and the higher prevalence of ECC

Resin-based composites demonstrate the best strength<sup>8</sup>, wear resistance, esthetics, and color-matching capabilities and are often the first choice of many clinicians for restoring anterior teeth. However, these materials are the most technique sensitive, require the use of acid etching and bonding agents, and are intolerant to moisture and/or hemorrhage.<sup>4</sup>

In the present case, the strip crowns with fiber post appeared to be a good solution for the esthetic. Glass fiber reinforced composite resin post are new to the pediatric world and can be used as an alternative to the other post systems. The properties of fiber-reinforced posts are dependent on the nature of the matrix, fibers, interface strength and geometry of reinforcement. Irrespective of the fact that which post system is used, the teeth should first be treated endodontically and root retention should fill about 1/3 of the root length.<sup>9,10</sup>

The patient had good hygiene habits, being well adhered to the treatment proposed. Through dietary diary of the patient reported, a low-nutrient and high-frequency diet was observed regarding the intake of sugary foods and beverages, especially at night. The literature confirms that dietary practices are an important cause of ECC, specifically through the consumption of sugary drinks and a diet rich in sugars and starches.<sup>5,6</sup>

The strip crowns are effective in restoring heavily damaged dental crowns, malformed teeth, hypoplasia and fractured teeth. The restorations offer strength, durability, good aesthetics, as well as greater coverage of the dental remnant and better marginal adaptation.<sup>7</sup>

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