

Aesthetic rehabilitation of primary anterior teeth using Composite Resin Strip Crowns: A case report

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ABSTRACT

Dental caries is the most common chronic disease of childhood. Pediatric dentists often confront children affected with early childhood caries where there early pulp involvement and gross destruction of maxillary incisors and molars. Treatment of such mutilated teeth represents a challenge to the clinician. Earlier stainless steel crowns were the restoration of choice for such teeth. Several esthetic restorative materials have been devised for anterior teeth of which strip crowns serve to be most aesthetic and is easy to perform. This case report describes management of mutilated maxillary incisors using composite resin strip crowns.

Keywords: Early childhood caries, mutilated, strip crowns, composite.

INTRODUCTION

Early childhood caries is a common disease entity in children. It usually manifests in children of 2-5 years of age with early pulpal involvement and gross destruction of maxillary incisors and molars. Esthetic restoration of such teeth presents a challenging task to the pediatric dentist.

Early restoration of such severely decayed teeth was performed with stainless steel crowns or bands, but these turned out to be unaesthetic and hence are preferred only for posterior teeth.¹ Stainless steel crowns still remain the restoration of choice in cases where the severely decayed primary incisors are left with minimal enamel for bonding, uncontrolled moisture and subgingival caries.² Stainless steel crowns appear to be the most durable and technique friendly restorations for severely decayed teeth.³

Amongst the wide array of preformed esthetic crowns, strip crowns is the most recommended crown form. It was first introduced by Webber in 1979.⁴ Strip crowns are indicated when the teeth are fractured, malformed or discoloured, severely decayed primary anterior teeth or as restoration after pulp therapy.^{1,4} These crowns are contraindicated in cases with insufficient tooth structure for bonding and retention, deep overbite and periodontal disease.^{1,4} The procedure requires strict moisture control and is very technique sensitive. Composite resin build up using strip crowns is widely accepted because of superior aesthetics as they mimic the natural tooth appearance.⁵

The present case report describes the rehabilitation of severely decayed maxillary central incisors using strip crowns along with fibre short post.

CASE REPORT

A 4-year old male patient accompanied by his parents reported to the Department of Pediatric & Preventive Dentistry, PGIDS, Rohtak (Haryana), with the chief complaint of severely decayed upper front teeth. Patient's medical history was

noncontributory. Patient's mother gave a history of breast feeding for 1 year after which the child was bottle fed (including nighttime bottle feeding) till 3 years of age. On intraoral examination, a complete set of deciduous dentition was observed. 51, 54, 61, 64 and 84 were found to be carious. Intraoral periapical radiographs revealed pulp involvement in relation to 51, 61 and 84. 54 and 64 were restored with glass ionomer cement and 84 was restored with stainless steel crown after pulpectomy. Both the maxillary incisors presented with remaining crown structure of more than 1 mm above the gingival margin with firm remaining tooth structure. Diet analysis, counseling and oral prophylaxis were performed. The child's parents were informed about the treatment plan, its advantage and shortcomings, other treatment alternatives and consequences if treatment was avoided.

The treatment goal was to remove infected pulp and restore function and esthetics by restoration of tooth architecture. Based on clinical & radiological examination, the treatment plan was divided into following 2 steps for maxillary incisors:
 Phase I: Endodontic phase

Gross carious tooth structure was removed with no. 330 round carbide steel bur. Pulpectomy was performed in both the teeth and teeth were obturation with metapex. The teeth were then sealed with GIC (Ketac Molar, 3M, ESPE, Minnesota, USA) [Figure 1(a),(b) and 2].



Fig.1 (a): Pre-operative



Fig.1 (b): Pre-operative

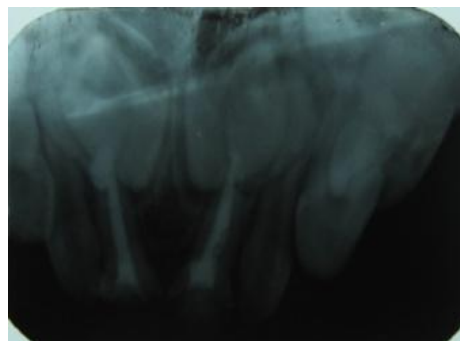


Fig.2: Obturation

Phase II: Esthetic rehabilitation phase

During second appointment, 1 week after the commencement of endodontic treatment, short fibre core post was cemented with flowable light cure composite (Nexcomp Flow, Meta Biomed, Korea) in tooth 51 to aid in the retention of composite resin strip crown. Tooth reduction was done on required surface and adequately sized celluloid crown form was selected for 51 and 61 [Figure 3]. The crowns were trimmed to an approximate level at the cervical edge and pierced with a sharp explorer at the mesial or distal incisal angle to allow escape of any entrapped air bubble in the crown. Acid etching and condition of prepared tooth was done. Care should be taken to remove a collar of cured bonding agent. Crowns were then filled with composite resin (Tetric N Ceram, Ivoclar Vivadent, India) material and seated onto the teeth. It is advised to fill and cure each crown individually with unfilled crown on their adjacent tooth to have proper spacing between adjacent restorations. Also, minimal filling of crown is recommended. After curing of the crowns, crown forms were peeled off with hand scaler and the restoration was then finished and polished [Figure 4(a) and (b)].



Fig.3: Strip crown placement

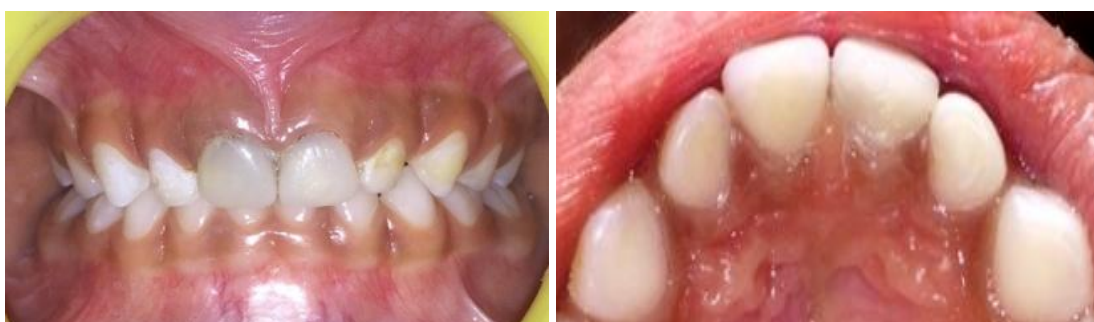


Fig.4 (a): Post-operative

Fig.4 (b): Post-operative

DISCUSSION

Early childhood caries (ECC) is a rapidly developing and progressive type of dental caries with distinctive pattern most commonly involving maxillary central incisors, lateral incisors, and maxillary and mandibular first primary molars.⁶ Treatment of such caries is a challenging task for the clinician. Numerous esthetic restorative materials have been proposed for restoring decayed primary incisors. The bonded composite resin strip crowns are the most esthetic of the various restorative materials. However strip crowns are most technique sensitive and may appear difficult to place. The treatment preference and outcome is affected by factors like moisture and haemorrhage control, child's behaviour, operator preference and aesthetic demand by parents.⁷

Several modifications of strip crown placement have also been devised. Margolis et al described the "sandwich technique" which employs the placement of a layer of resin modified glass ionomer cement to exposed dentin prior to composite filled crown form seating.⁸ This prevents debonding of composite resin in areas with lack of enamel and gingival margins.

Kenny et al demonstrated composite resin short post or mushroom undercut in dentin for adequate retention of crown.⁹ In a study by Kupietzky et al, the success of composite resin strip crown was assessed.¹⁰ The study reported a retention rate of 88% crowns with a mean follow up of 18 months. Partial loss of resin was seen in 12% of teeth and none of the crowns were completely lost. Also 78% of the parents were reported to be very satisfied with the crowns. The clinical success of strip crown placement was also compared by Eidelman with treatment under general anaesthesia and conscious sedation and it was found that the performance of crowns was better under general anaesthesia, thus eliminating patient cooperation as a factor affecting treatment outcome.¹¹

CONCLUSION

The composite resin strip crowns is the most esthetic restoration available for the rehabilitation of severely decayed primary incisors with large or multi-surface caries. Minimum finishing and polishing is required with these crowns. Parental satisfaction is excellent with this treatment option. These crowns lead to aesthetic and functional rehabilitation of decayed primary incisors. It reduces clinician's time as well as fatigue.

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