

## CASE REPORT

# Restoring a Young Smile - A Case Study

Riddhi Mehta

## ABSTRACT

Pediatric esthetic dentistry is a branch that deals with maintenance and enhancement of beauty of the mouth of infants and children through adolescence, including those with special health-care needs. Increasing demand of young generation for esthetics has resulted in the development of several techniques for restoring the deciduous anterior teeth. Composite resin restorations have become an integral part of contemporary restorative dentistry and can be called “star of minimal invasion” due to its conservative concepts. The direct composite veneering allows restoring the tooth in a natural way and preservation of sound tooth structure when compared to indirect restorations.

**Keywords:** Composites, Direct restorations, Esthetics, Pediatric patients.

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## INTRODUCTION

Tooth decay occurs when specific types of bacteria produce acid that destroys the tooth's enamel and its underlying layer, the dentin. It can happen when foods containing carbohydrates (sugars and starches) are left on the teeth. Such foods include milk, soda, raisins, candy, cake, fruit juices, cereals, and bread. Bacteria that normally live in the mouth change these foods, making acids. The combination of bacteria, food, acid, and saliva forms a substance called plaque that sticks to the teeth. Over time, the acids made by the bacteria eat away at the tooth enamel, causing cavities. Children are on a higher risk of developing caries due to a diet generally higher in sugar and starches, poor oral hygiene, and comparatively less salivary flow than normal.

In most cases, treatment requires removing the decayed part of the tooth and replacing it with a filling. Fillings are materials placed in teeth to repair damage caused by tooth decay. They are also called restorations. There are different types of restorations.

Private Practitioner

Mehta's Dental Care, Kota, Rajasthan, India

**Corresponding Author:** Dr. Riddhi Mehta, Mehta's Dental Care, E-25, Vallabhbari, Kota, Rajasthan, India. e-mail: riddhi.jain@gmail.com

## Direct Restorations

These need a single visit to place a filling directly into a prepared hole. These fillings may be made out of silver, fine glass powders, acrylic acids, or resin. They are often tooth colored.

## Indirect Restorations

These require two or more visits. They include inlays, onlays, veneers, crowns, and bridges. These are constructed with gold, base metal alloys, ceramics, or composites. Many of these materials can look like natural tooth enamel.

## CASE REPORT

A girl aged 4 years was referred to the dental practice. She was not happy with her smile. On oral examination, it was revealed that she had Class IV decay in her maxillary deciduous central incisors and Class V cavities in her upper deciduous laterals. Taking into consideration the patients's age, direct composite veneering was planned. Gross removal of caries was done sparing the pulp chamber. The color was recorded using the VITA Classical shade guide, and shades A1 and A2 were considered as the initial color. The tooth preparation involved a minimal chamfer on the facial surfaces. Cotton rolls and salivary ejectors were used for field isolation. The enamel surface was acid etched using 37% phosphoric acid (D-Tech Etching Gel, Kerr, USA) for 20 s, rinsed for 10 s, and dried. A bonding agent (Adper Single Bond, 3M ESPE, USA) was applied on the prepared enamel and light-cured for 10 s. A putty index was made to make the palatal shelf. A stratified layering technique was used to fill the tooth with Filtek™ Z350 XT (3M ESPE, USA) shade A1E. The composite was light-cured for 10 s on each surface. Each surface was polymerized from incisal/occlusal, facial, and lingual aspects for an additional 20 s. Restoration was finished and polished with polishing discs (UltraGloss Composite Polishing System, Axis, USA) [Figure 1]. The patient was motivated for the maintenance of oral hygiene and informed for regular recalls every 6 months.

## DISCUSSION

Difficulties with behavior management, the young age of the child, parental consent, cost of treatment,<sup>[1]</sup>

reluctance on the part of the clinician, and differences in caries risk may all be obstacles in deciding on restorative options for primary incisors. The time, expense, and effort to manage these young children and restore the incisors can be a costly exercise, particularly when compared to other restorative or surgical procedures that might be done in the mouth. The aim of treatment in this case was to restore patient's esthetics and self-esteem. Cognitive theory by Jean Piaget states that adolescents are egocentric. This dwelling of one's self may make an individual overly self-conscious. Hence, esthetics should be taken as a major consideration while treating pediatric patients.

### Intracoronar Restorations of Primary Anterior Teeth

Class V restorations for primary incisors are relatively easy to do. They can be restored with any of the esthetic restorative materials: Glass ionomers, compomers, resin-reinforced glass ionomers, or composite resins. Class III and Class IV restorations of primary incisors, on the other hand, can be quite challenging. Due to the small clinical crown, the relatively large size of the pulp chamber, the close proximity of the pulp horns to the interproximal surfaces, and the thinness of the enamel, repairing interproximal decay in these teeth requires preparations that are conservative in depth with close attention to detail, both to the preparation itself and to



Figure 1: Direct composite veneers

the material placement.<sup>[2]</sup> It is highly technique sensitive. Moisture control, hemorrhage control from the gingiva, and retention of the rubber dam are all challenges to be overcome to get a successful result, and keeping a very small conservative preparation - such as a slot preparation - may not be the best choice.<sup>[3]</sup> Therefore, it has been recommended that even small Class III restorations in primary incisors have a labial or lingual dovetail or somehow incorporate a large surface area for bonding to enhance retention. This may entail veneering the entire labial or lingual surface as part of the restoration.<sup>[3,4]</sup> Sometimes, gross decay removal can be performed and a glass ionomer placed in these areas. This, however, might better be considered as a caries-control procedure rather than definitive restorative dentistry.

### Full Coronal Restoration of Primary Incisors

Full coronal restoration of carious primary incisors may be indicated when: (1) Caries is present on multiple surfaces, (2) there is extensive cervical decalcification, (3) pulpal therapy is indicated, (4) caries may be minor, but oral hygiene is very poor (high-risk patients), or (5) the child's behavior making moisture control very difficult. The crowns that are available for restoring primary incisors [Table 1] can be placed into two categories: (1) Those that are preformed and held onto the tooth by a luting cement and (2) those that are bonded to the tooth.

The most esthetic restorative option for carious primary incisors is the bonded strip crown.<sup>[5,6]</sup> This is the first choice of many clinicians due to the superior esthetics and the ease of repair if the crown should subsequently chip or fracture. Besides this, there are two other bonding alternatives, one is the pedo jacket and other is the New Millennium crown (laboratory-enhanced composite resin material).<sup>[7]</sup> The easiest and most durable restoration for severely decayed primary incisors is a stainless steel crown. It can be placed

Table 1: Crowns available in market

Crown	Company	Additional information
Nusmile	Orthodontic technologies	Different lengths available. Resin facing on an SCC. Crimp only on lingual surface
Cheng crowns	Peter chang orthodontic laboratory	One length, one shade. Resin facing on an SCC. Crimp only on lingual surface
Kinder crowns	Mayclin dental studios	Different lengths available, 2 shades, Resin facing on an SCC. Crimp only on lingual surface
Dura crowns	Space maintainers laboratory	May be crimped on labial and lingual, 1 shade, flexible facing attached to SCC
New millennium crowns	Space maintainers laboratory	Laboratory-enhanced composite resin crown form
Pedo jackets	Space maintainers laboratory	Copolyester crown form 1 shade
Strip crowns	Space maintainers laboratory	Seamless plastic crowns form without long cervical collars

quickly and successfully onto very little tooth structure, even in the presence of blood and saliva, and can be easily crimped. It is, however, very unesthetic. These crowns can be made more esthetic by making them as open-face crowns (Cheng Crowns, Cheng Laboratory; NuSmile Crowns, Orthodontic Technologies; Kinder Crowns, Mayclin Laboratory; and Dura Crowns, Space Maintainers Laboratory). These pre-veneered crowns can be very esthetic<sup>[8]</sup> and can be placed successfully even with poor moisture or hemorrhage control.<sup>[9,10]</sup> These crowns, however, are not easy to fit and require a rather long learning curve.

## CONCLUSION

Direct composite veneering results in minimal invasion and maximum preservation of sound tooth structure when compared to indirect restorations. These restorations can be easily repaired which is a more conservative and preferable option than replacement. Thus, direct composite resin restorations have become a viable alternative for young patients that require anterior restorative procedures.<sup>[11,12]</sup> Direct composite veneers allow the operator to control and evaluate entire procedure from shade selection to final morphology usually in a single appointment. With the advent of microhybrid and nanohybrid composites, finishing and polishing of these restorations can rival that of porcelain.<sup>[13]</sup> In 1997, Peumans *et al.* found 89% success rate of direct composite veneers after 5-year follow-up.<sup>[14]</sup> Esthetics and durability of composite materials have improved dramatically over years. Polishing of direct composite veneers is easy, and any cracks or fractures on the restoration may be repaired intraorally.<sup>[15]</sup> Furthermore, marginal adaptation is better than that of indirect veneer restorations.<sup>[16]</sup> However, materials have some inherent disadvantages such as color instability, polymerization shrinkage, and excessive wear. It can be concluded that while treating a pediatric patient, equal consideration should be paid to esthetics along with function for the proper psychological development of the child.

## REFERENCES

1. Tinanoff N, O'Sullivan DM. Early childhood caries: Overview and recent findings. *Pediatr Dent* 1997;19:12-6.
2. Waggoner WF. Restorative dentistry for the primary dentition. In: Pinkham JR, editor. *Pediatric Dentistry: Infancy through Adolescence*. 2<sup>nd</sup> ed. Philadelphia: WB Saunders Co; 1994. p. 298-325.
3. Piyapinyo S, White G. Class III cavity preparation in primary anterior teeth: *In vitro* retention comparison of conventional and modified forms. *J Clin Pediatr Dent* 1998;22:107-12.
4. McAvoy SA. A modified Class III cavity preparation and composite resin filling technique for primary incisors. *Dent Clin N Am* 1984;28:145-55.
5. Webber DL, Epstein NB, Wong JW, Tsamtsouris A. A method of restoring primary anterior teeth with the aid of a celluloid crown form and composite resins. *Pediatr Dent* 1979;1:244-6.
6. Ram D, Peretz B. Composite crown-form crowns for severely decayed primary molars: A technique for restoring function and esthetics. *J Clin Pediatr Dent* 2000;24:257-60.
7. Yanover L. The artglass primary anterior esthetic crown. *J Southeastern Soc Pediatr Dent* 1999;5:10-2.
8. Roberts C, Lee JY, Wright JT. Clinical evaluation and parental satisfaction with resin-faced stainless steel crowns. *Pediatr Dent* 2001;23:28-31.
9. Croll T, Helpin M. Preformed resin-veneered stainless steel crowns for restoration of primary incisors. *Quintessence Int* 1996;27:309-13.
10. Croll TP. Primary incisor restoration using resin-veneered stainless steel crowns. *ASDC J Dent Child* 1998;65:89-95.
11. Vale T, Santos P, Moreira J, Manzanares MC, Ustrell JM. Perception of dental aesthetics in paediatric dentistry. *Eur J Paediatr Dent* 2009;10:110-4.
12. Ardu S, Stavridakis M, Krejci I. A minimally invasive treatment of severe dental fluorosis. *Quintessence Int* 2007;38:455-8.
13. Fahl N Jr. A polychromatic composite layering approach for solving a complex class IV/direct veneer/diastema combination: Part II. *Pract Proced Aesthet Dent* 2007;19:17-22.
14. Peumans M, Van Meerbeek B, Lambrechts P, Vanherle G. The 5-year clinical performance of direct composite additions to correct tooth form and position. II. Marginal qualities. *Clin Oral Investig* 1997;1:19-26.
15. Berksun S, Kedici PS, Saglam S. Repair of fractured porcelain restorations with composite bonded porcelain laminate contours. *Journal Prosthet Dent* 1993;69:457-8.
16. Jordan RE. *Esthetic Composite Bonding Techniques and Materials*. 2<sup>nd</sup> ed. St. Louis, Mo, USA: Mosby-Year book; 1993.