

Acrylic Crowns for Esthetic Rehabilitation of Primary Teeth

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Abstract

Grossly destructed anteriors and compromised esthetics are very commonly seen in the early childhood caries. Primary maxillary anterior teeth dominate the physical appearance, and their structural loss affects not only esthetics but also leads to compromised mastication, poor phonetics, development of aberrant oral habits, neuromuscular imbalance, and difficulty in social and psychological adjustment of the child. To prevent this restoration of maxillary anteriors with suitable option is highly expected. One of the options available apart from the routine tooth-colored restorations is the heat cure acrylic crown. This paper focuses the advantages and disadvantages in a way attempt to discuss custom made full coverage restoration, i.e., heat cure acrylic crown for anterior esthetic rehabilitation for pediatric patients.

Keywords: Acrylic crowns, esthetic rehabilitation, primary teeth

INTRODUCTION

Grossly destructed anteriors and compromised esthetics are very commonly seen in the early childhood caries. Even though the deciduous dentition is temporary dentition, it has a definitive role in oral cavity until its exfoliation. Primary maxillary anterior teeth dominate the physical appearance, and their structural loss affects not only esthetics but also leads to compromised mastication, poor phonetics, development of aberrant oral habits, neuromuscular imbalance, and difficulty in social and psychological adjustment of the child.

In the modern, civilized, and cosmetically conscious world, well-contoured and well-aligned white teeth set the standard for beauty. Such teeth are not only considered attractive but are also indicative of nutritional health, self-esteem, hygienic pride, and economic status.^[1] There is a rapid increase in the awareness among parents of children for solutions to problems related to nursing bottle caries, malformed and discolored teeth.

The main problem facing the clinician while performing esthetic restorations in children is the small size of teeth, proximity of the pulp to the tooth surface, relatively thin enamel, and surface area for bonding a restoration, and the behavior of the child.^[2]

Numerous treatment approaches have been proposed to address the esthetics and retention of restorations in primary teeth.

Over the years, there have been four types of full coverage restorations available to restore primary incisors which include stainless steel crowns, stainless steel crowns with facing, strip crowns, and other prefabricated crowns.^[3-5]

However, main problem related to this options include metallic appearance and/or cost of the treatment.^[3] As these crowns are prefabricated its fitting, marginal integrity, and retentiveness is quit questionable. One of the options available apart from the routine tooth-colored restorations is the heat cure acrylic crown. This paper focuses the advantages and disadvantages in a way attempt to discuss custom made full coverage restoration, i.e., heat cure acrylic crown for anterior esthetic rehabilitation for pediatric patients.

CASE REPORT

A female patient (age: 3 years 10 months) reported with a chief complaint of decayed front teeth. Owing to the unesthetic appearance of the decayed teeth [Figures 1 and 2], the parents wanted a good quality of esthetic restoration to be done on

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Figure 1: Extensively decayed maxillary anteriors with poor aesthetics.



Figure 2: Extensively decayed maxillary anteriors with 1–1.5 mm tooth structure available above the gingival margin.



Figure 3: Elastomeric impression with putty and light body after short postcomposite build up on 51, 52, 61, 62.



Figure 4: Cast retrieved and wax pattern fabricated on 51, 52, 61, 62 frontal view.



Figure 5: Wax pattern fabricated on 51, 52, 61, 62 palatal/lingual view.

affected teeth. The patient was carefully assessed according to the parameters required for restoration using the acrylic crown. Once the parameters were found to be satisfactory, it was decided to restore the teeth with acrylic crowns.



Figure 6: Frontal view of cast without wax pattern or crowns with composite build up on 51, 52, 61, 62.

A thorough assessment of the case was carried out with regards to availability of crown structure, and it was confirmed that at least 1–1.5 mm tooth structure was available above the gingival margin [Figure 2]. There was sufficient clearance with respect to overjet and bite.



Figure 7: Heat cure acrylic crowns fabricated with good quality of finishing and polishing on 51, 52, 61, 62 frontal view.



Figure 8: Heat cure acrylic crowns fabricated with good quality of finishing and polishing on 51, 52, 61, 62 lingual view.



Figure 9: Acrylic crown cemented on 51, 52, 61, 62 extraoral frontal view.



Figure 10: Acrylic crown cemented on 51, 52, 61, 62 close up frontal view.

Pulpectomy was carried out in 51, 52, 61, and 62 and precaution was taken that obturation terminates 2–2.5 mm below the cemento-enamel junction radiographically. Intracanal acid etching with 37% phosphoric acid was carried out. After drying, the bonding agent was applied and cured. The composite build-up was carried out from intracanal prepared space. 3 to 4 mm composite build up was done above free gingival margin.^[6]

Crown preparation was done and the impression was made with elastomerics and cast was poured and retrieved. Wax pattern was fabricated on cast [Figures 3–6] and with typical lost wax technique; the heat cure acrylic crown was fabricated with appropriate shade match. Good quality of surface finishing and polishing was done and cemented on 51, 52, 61, and 62 [Figures 7–10].

Patients were recalled at 3, 6, and 12 months and the crowns were assessed for fractures, loss of marginal integrity, mobility, and caries at the margin. The restoration was well accepted with no any undesirable outcomes.

DISCUSSION

Esthetic restorations in primary anterior teeth have been a great concern and challenging task for most of the clinicians. The

restoration of carious, fractured, or discolored primary incisors is rewarding to dentists because it gives them the satisfaction of knowing they have restored the smile and self-confidence of a growing child. However, restoring primary teeth can be a strenuous task because of the difficulty in keeping these patients teeth dry and the uncooperative behavior of the child.

The use of heat cure acrylic crowns as a long-term provisional restoration is well accepted and far common in permanent teeth. Acceptable mechanical and esthetical properties of polymethyl methacrylate as provisional restoration in permanent teeth were extensively studied.^[7]

Robert reported the technique of in office heat processed acrylic resin provisional restorations.^[8]

Important parameters for successful restoration include at least 1–1.5 mm healthy tooth structure should be available above gingiva, sufficient clearance with respect to overjet and bite should be present, radiographically at least two-third of root length with no periapical pathology or internal resorption should be present.

A tapered diamond point was used to reduce the mesial, distal, and labial axial surfaces at a 15° to 20° taper.^[6] This provides

room for an adequate bulk of crown material for the strength of the restoration, a desirable margin and optimal esthetic appearance. In the present case, thin chamfer type of finish line was placed. SO-20 and TR 13 EF diamond points were used in the present case for tooth preparation and finishing, which can be customized according to operator's convenience.

In the present case, the custom made heat cured acrylic crowns were focused. Since these crowns are custom made, its retention and stability would probably be better than other options, especially in such cases where there is minimum tooth structure present. Some disadvantages related to this technique are two seatings and laboratory work is required.

Judd *et al.* reported the 100% success rate for retention of the composite resin crown restoration with short post in deciduous teeth.^[6]

One more advantage while doing wax pattern is, mesiodistal and cervicoincisal dimension can be very finely adjusted according to best suitable to the patient since this is not possible with prefabricated crowns. Since these crowns are custom made its marginal adaptation would be considerably better than other available options.^[9] Because of heat curing the discoloration is not seen with these crown and so more stable esthetic outcomes. Finally, the cost of treatment is considerably reduced.

CONCLUSION

The main aim of this paper is to highlight the heat cure acrylic crowns with its technique, advantages, disadvantages, and it would be good treatment option from routine available options for restoring the beautiful smiles of children. In the restoration of the primary anterior teeth, esthetics and mechanical resistance to fracture are of great importance for obtaining a long-lasting result. With proper patient selection and careful

attention to a preparation so that it provides adequate retention, the technique can be used successfully.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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