

Anterior Esthetic Options for Children

AUTHORS: DR ANUP PANDA¹, DR PRIYANKA CHIRAG PANCHAL², DR JOLLY SHAH³, DR VENIKA GARG⁴

Abstract:

One of the pediatric dentist's greatest restorative challenges is the esthetic rehabilitation of a young toddler who has suffered multiple tooth loss subsequent to rampant early childhood caries or extensive dental trauma. An anterior esthetic appliance may be used to replace lost teeth. The most decisive factor for placing an anterior esthetic appliance is parental desire. ECC, known previously as baby bottle caries, nursing bottle caries, baby bottle tooth decay, or nursing decay, is a relatively new term that

describes rampant dental caries in infants and toddlers. The condition, when associated with the bottle habit, has been characterized as first affecting the primary maxillary anterior teeth, followed by involvement of the primary molars. The extent of decay is almost always more severe in the maxillary incisors, and, frequently, by the time the child is brought to the dentist, much of the anterior clinical crowns are decayed or lost. Many options exist to repair carious primary incisors, which are described in these articles.

Keywords: childhood caries, esthetic rehabilitation

Introduction

Esthetics is the science of beauty; that particular detail of an animate or inanimate object that makes it striking to the eye. In the recent times, well contoured and well aligned white teeth place the customary for beauty. Such teeth are not only considered eye-catching, but are also indicative of nutritional health, confidence, hygiene and economic class. With the growing receptiveness of the available esthetic options, there is a superior requirement for the solution to displeasing problems such as nursing bottle caries, malformed and discolored teeth, hypo plastic defects, tooth fractures and bruxism in children¹.

Apart from a compromise in esthetics, dental destruction may also lead to development of Para functional habits like tongue thrusting and speech problems, psychological problems, reduced masticatory efficiency and loss of vertical dimension of occlusion. Hence it is important to restore crowns destroyed by caries to preserve the integrity of primary dentition until its exfoliation and eruption of permanent teeth².

In the past, inadequate esthetic options in addition to the severity of the condition have prompted extraction in most of the cases, in spite of the treatment being not convincing both to the parents as well as the clinicians.

Even though treatment modalities for esthetic restoration of anterior primary teeth range from placement of stainless steel crowns to ceramic – based metal crowns, the use of a composite strip crown has been preferred and has performed well in spite of its limitations, due to the type of material and size of the lesion, which may affect its stability, retention, and marginal adaptation. In extreme forms, extraction can be an alternative followed by a removable or fixed appliance³.

This article presents four case reports where five different techniques are utilized to restore mutilated and extracted primary anterior teeth.

Case Report I: Anterior esthetics Fixed replacement of tooth A 4 year-old boy, conscious of his appearance, presented to the Out Patient Unit of Pediatric Dentistry, CDSRC Ahmedabad with the chief complaint of missing front tooth. On examination, the child was found to missing teeth with respect to 51 52 61 62 and grossly

carious teeth with respect to 54 64. An intraoral periapical radiograph of these teeth show radiolucency approaching pulp with respect to 54 64. The clinical procedure includes Pulpectomy followed by placement of stainless steel crown and for appliance fabrication consisted of placement of the band with respect to 55 65. Another wire extension of similar dimension was soldered to the adapted wire framework so that it extended vertically into the space of 51 52 61 62. An acrylic crowns matched with 51 52 61 62 in sizes, shape, shade and contour were attached to the vertical wire extension using cold cured acrylic. The excess resin was trimmed and the bands along with the attached wire framework was finished and polished. The entire framework was then placed into the patient's mouth by cementing the band with respect to 55 65. Appropriate oral hygiene instructions were given to the patient. The follow-up after 1 month showed the prosthesis to be successfully catering to the esthetic needs of the child.



Figure : 1



Figure : 2

Case Report II: Biologic restorations and removable partial denture A 3-1/2-year-old boy presented to the Out Patient Unit of Pediatric Dentistry, CDSRC Ahmedabad with the chief complaint of poor facial appearance due to discolored and worn out front teeth. On examination, the child was found to have multiple carious lesions with root stumps of the maxillary primary central and lateral incisors of right side and missing central and lateral incisors on left side. Clinically, the root stumps of 51 52 were found to be mobile. The management of this patient consisted of, giving complete preventive care, along with, restoration of all decayed teeth with composite resin. For his chief complaint of grossly decayed maxillary canine, a decision to rehabilitate with biologic restorations was made, and for replacing the maxillary anterior a removable partial denture was given.



Figure : 3



Figure : 4



Figure : 5

Case Report III: omega loop A 5-year-old girl presented to the Out Patient Unit of Pediatric Dentistry, CDSRC

Ahmedabad with the chief complaint of pain in upper right back region of jaw since 3 days. On examination, the child was found to have multiple carious lesions with root stumps of 51 52. The management of this patient consisted of, giving complete preventive care, along with, endodontic and restorative treatment of needed tooth and placement of omega loop with respect to 51 52 followed by crown build with Revotek with respect to 51 52 61 62.



Figure : 6



Figure : 7



Figure : 8

Case report IV: strip crown and fiber splint

A 5-year-old girl presented to the Out Patient Unit of Pediatric Dentistry, CDSRC Ahmedabad with the chief complaint of absent tooth in upper front teeth region. On taking the history of the patient it was found the child had injury one month back. On clinical examination, it was found that there was tooth avulsion with 61. Apart from this, carious lesions were present with 51, 55 and 85. The management of this patient consisted of restoring the carious lesions along with the complete preventive care followed by rehabilitation of 51 using composite pontic. Appropriate size of strip

crown was selected, filled with composite material. Additional strength was attained by passing a fiber splint from the centre of the strip crown. Crown along with splint was loaded with composite, cured outside the oral cavity before splinting to 51 and 62 with the help of composite resin.



Figure : 9



Figure : 10



Figure : 11



Figure : 12

Discussion

Despite the introduction of various novel techniques for restoring carious lesions in the primary incisors, still it is a challenge for the clinician to satisfy the patient effectively⁴. Esthetic restoration of primary anterior teeth can be especially challenging due to the small size of the teeth, close proximity of pulp to tooth surface, relatively thin enamel and surface area for bonding, issues related to child behavior and finally cost of the treatment⁵. Apart from a compromise in esthetics, dental destruction may also lead to development of parafunctional habits. Hence it is important to restore crowns destroyed by caries to preserve the integrity of primary dentition until its exfoliation and eruption of permanent teeth.

One of the most important and valid reasons for replacing missing incisors is to restore a natural and pleasing appearance and thus provide an opportunity for normal psychological development⁶.

In first case a fixed functional space maintainer has been used for restoring lost primary incisors, instead of a conventional removable acrylic plate. It is an effective treatment alternative with dual advantage of aesthetics as well as space maintenance. It does not rely on patient compliance for its use. Plaque and food debris accumulation is increased with the fixed anterior appliance. At the present time there is no evidence that prosthetic appliances might restrict a child's oral growth⁷. The intercanine growth between the ages of 2-4 years is minimal (< 0.5mm) and is clinically insignificant⁸. Changes in arch length with tooth migration generally occur after the eruption of the first permanent molar. At that time, the fixed appliance may be removed as this represents the time that the incisors would normally be exfoliating.

In second case, canines were restored with biological restoration. Following biological restoration of canines, both central incisors and lateral incisors were rehabilitated using removable partial denture. Regarding primary teeth, Tavares et al were the first authors to describe a case in which tooth fragments were used to restore carious elements⁹. The technique of biological restorations shows good aesthetics and adaptation regarding occlusal and cervical

adjustment. Ramires-Rorito et al¹⁰ reported that these restorations are less subjected to extrinsic pigmentation when compared to composite restorations. Biological restoration has a practical clinical applicability and is a viable, cost effective restorative procedure for teeth with severely damaged crowns.

In third case, the anterior teeth were replaced using omega loop. After endodontic treatment and placement of intra-canal retainers, the remaining coronal structure can be restored with direct or indirect technique¹¹. Rifkin¹² described restoring primary anterior teeth with post and crown. But it was not widely accepted because of the potential for interference with physiologic root resorption if the wire extends a long way into the root.

In addition, it can increase internal stresses within the root leading to fracture if the post is forcibly fitted into a narrow canal.

In fourth case, avulsed tooth is restored using strip crown and fiber splint. The retention rate of the SC in the present study was high, with a rate of 88% demonstrated by Kupietzky et al¹³. Composite resin strip crowns performed well to restore primary incisors with large or multisurface caries. Various fiber types have been used to improve the physical and mechanical properties of composite resins, such as glass, carbon,

KevlarTM, VectranTM and polyethylene¹⁴. Polyethylene fibers are routinely used in current restorative dentistry. These fibers improve the impact strength, modulus elasticity and flexural strength of composite material¹⁵. The various advantages of this material include ease of adaptation to dental contours and ease of manipulation during the bonding process¹⁶. It also meets the patients' esthetic expectations¹⁷.

Conclusion

This case reports stressed that aesthetic appearance may be a very important factor, even to small children and should be taken into account during oral rehabilitation.

Teeth lost in the anterior region infrequently require space maintenance, but demand rehabilitation from a psychological point of view. Technological advances in dental materials and new approaches in their use have yielded convincing results. Many restorative options exist for treating primary anterior teeth. Finally the choice of restorative technique depends upon the operator preferences, esthetic demands by the parents and child's behavior that affect the ultimate outcome.

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PARTICULARS OF CONTRIBUTORS :

- 1) Professor & HOD, Dept. of Pedodontics and Preventive Dentistry, College of Dental Sciences & Research Centre, Ahmedabad, Gujarat
- 2) Post Graduate Student, Dept. of Pedodontics and Preventive Dentistry, College of Dental Sciences & Research Centre, Ahmedabad, Gujarat
- 3) Post Graduate Student, Dept. of Pedodontics and Preventive Dentistry, College of Dental Sciences & Research Centre, Ahmedabad, Gujarat
- 4) Post Graduate Student, Dept. of Pedodontics and Preventive Dentistry, College of Dental Sciences & Research Centre, Ahmedabad, Gujarat

ADDRESS FOR CORRESPONDENCE:

Dr. Anup Panda
Professor and HOD
Dept. of Pedodontics and Preventive Dentistry,
College of Dental Sciences & Research Centre, Ahmedabad, Gujarat.
Email: dranuppanda76@gmail.com, Mob. +91 9820900015

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