



## ESTHETICS IN PRIMARY TEETH

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Article Received on: 10/07/13 Revised on: 18/07/13 Approved for publication: 12/08/13

DOI: 10.7897/2230-8407.04813

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## ABSTRACT

Dental esthetics is an integral part of facial esthetics. Esthetic problems in childhood and adolescence can have a significant effect on psychosocial development and interaction with peers. 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 treatment. The advent of different techniques, devices, and materials helps in creating beautiful restorations which help children and adolescents improve their self-image.

**Keywords:** Esthetics, smile, children

## INTRODUCTION

The study of facial esthetics and beauty entails a comprehensive evaluation of proportion and harmony as related to individual ethnic and cultural ideals. Dental esthetics is an integral part of facial esthetics. Esthetic concerns about the smile often are the patient's main reason other than pain for seeking dental care. The psychologic benefits of an oral esthetic improvement are potentially more important to a patient than traditional dental procedures. Loss of anterior teeth can lead to neuromuscular imbalance with decreased masticatory efficiency, speech disturbance, development of parafunctional habits and psychological problems.<sup>1</sup> Esthetic problems in childhood and adolescence can have a significant effect on psychosocial development and interaction with peers. Abnormalities of shape, size, color and structure of the whole or part of the anterior dentition of children can lead to such problems.<sup>2</sup> In the modern 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.<sup>3</sup> With the growing awareness of the esthetic options available, there is a greater demand for solutions to unsightly problems such as caries, discolored teeth, hypoplastic defects, fractures and missing teeth in children and young adolescents. 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 treatment.<sup>4</sup> The restoration of primary anterior teeth can be an intracoronal or a full coronal restoration.

### Material Selection for Intracoronal Restoration of Anterior Teeth

With the vast number of esthetic materials available today, there should be little or no reason to ever consider using amalgam for the restoration of anterior teeth. Though amalgam is the least technique-sensitive restorative material for intra coronal restorations, its poor esthetics contraindicates its use. Composite resin materials are often the first choice of many clinicians for restoring anterior teeth. Composites maintain color, esthetics and can be bonded to tooth structure with currently available adhesives used in

conjunction with the enamel acid-etch technique, but these materials are highly technique sensitive. Due to the young age of some children treated and associated behavior management difficulty, it is sometimes impossible to isolate teeth for the placement of composite restorations. Nano composites are different from other types of composites in that they contain nano-sized fillers. One such product is Filtek Supreme XT, introduced in early 2003. Nanomers are discrete non-agglomerated and non-aggregated particles of 20-75 nm in size. This has superior translucency, esthetics, excellent color and high polish ability. Glass ionomer restorative materials (GICs) known as dentin replacement materials<sup>5</sup> have several properties that make them favorable to use in children: i. chemical bonding to both enamel and dentin ii. thermal expansion similar to that of tooth structure iii. biocompatibility iv. uptake and release of fluoride v. decreased moisture sensitivity when compared to composite resins. Primarily due to reduced esthetics and strength, glass ionomers would not be a first choice of material for restoring primary incisors. Resin-modified glass ionomers have improved wear resistance compared to the original glass ionomers and are appropriate restorative material for primary teeth.<sup>6</sup> Resin-modified glass ionomers release fluoride and are less moisture sensitive. Esthetics can be good, but not as good as compomers or composite resins. Additionally, wear and strength are not as good as the resins, or polyacid-modified resins. In circumstances where isolation of the tooth to be restored is difficult, particularly with very young children, glass ionomer cement or resin-modified glass ionomer cement is the restorative material of choice. Lack of isolation will cause resin-based composite restorations to fail, whereas glass ionomer cement can still set in the presence of water. The latest advancement in glass ionomers is the "nano-ionomer (Ketac N100), a nano filled resin-modified glass-ionomer restorative cement that is recommended for primary teeth restorations and interim repair of all permanent teeth. The fluoride concentration on material surface is similar for Ketac N100 and other glass-ionomer cements and has less porosities and surface cracks than Fuji materials.<sup>7</sup> Compomers have many of the same characteristics as composite resins, with similar esthetics. They have some fluoride release and little more moisture tolerant than composite resins.<sup>8</sup> Giomer is a hybrid aesthetic restorative

materials with low moisture sensitivity, low initial mechanical properties and inferior translucency; and at the same time maintain their clinical advantages such as fluoride release and adhesiveness.<sup>9</sup> A variety of esthetic restorative materials are available for restoring anterior teeth. Knowledge of the specific strengths, weakness, and properties of each material will enhance the clinician's ability to make the best choice of selection. Operator preferences, esthetic demands by parents, the child's behavior, moisture and hemorrhage control are all variables which affect the decision and ultimate outcome of whatever restorative treatment is chosen. The full coronal restoration can be discussed under:

- A. Cemented crowns
- B. Bonded crowns

#### **Cemented Crowns**

Carious primary teeth often require full coverage restoration, and the most reliable restoration is the stainless steel crown (SSC). In today's cosmetically conscious society, however, most parents demand esthetic restorations, often preferring extraction to a metal crown's unattractive appearance. A restoration growing in popularity is the Pre veneered stainless steel crown (PVSSC). With a PVSSC, composite or thermoplastic resin is bonded to the facial surface of a traditional SSC which offer better esthetics combined with the durability of stainless steel crowns.

#### **Nusmile Crowns**

This is indicated when a full coverage restoration is needed for longevity and for protection of remaining tooth structure. The advantages include color compatibility and stability, easy placement, less time consuming and durability.

#### **Kinder Crowns**

Kinder crowns offers the most natural shades and contour available for the paediatric patient. They are available in two aesthetically pleasing shades. Pedo2 shade is the most natural shade while Pedo1 shade is for those cases where the bleached white shade is wanted. It is designed with incisalock™ for better bonding and mechanical retention.<sup>10</sup>

#### **Cheng Crowns**

These are stainless steel pediatric anterior crowns faced with a high quality composite, mesh-based with a light cured composite. It is color stable, plaque resistant and match pedo-shades and can undergo heat sterilization without change in their bond strength and color. The crown procedure can be completed in one patient visit and with less patient discomfort.<sup>11</sup>

#### **Pedo Pearls**

These are beautiful heavy gauge aluminum crowns coated with FDA food grade powder coating and epoxy-resin. Features include universal anatomy, easy to cut and crimp without chipping or peeling, but these crowns are relatively soft and less durable.<sup>12</sup>

#### **Dura Crowns**

Dura crowns can be crimped labially and lingually and can be easily trimmed with crown scissors, festooned and has got a full-knife edge. These crowns with veneer facings were significantly more retentive than the non veneered ones when cement and crimping were combined.<sup>13</sup>

#### **Pedo Natural Crowns**

These crowns are made from polycarbonate material. They are thin, ultra flexible and durable with superior marginal integrity and high tensile strength.

#### **EZ Pedo Crowns**

These are metal free pre fabricated crowns with superior esthetics, strength and durability. These crowns are built in Zir lock technology which increases the internal surface area reducing the possibility of clinical failure.

#### **Bonded Crowns**

##### **Polycarbonate Crowns**

These are heat moulded acrylic resin used to restore primary anterior teeth. It is esthetic, easy to trim and can be adjusted with pliers. These crowns do not resist strong abrasive forces; hence it is contraindicated in cases of severe bruxism and deep bite.<sup>14</sup>

##### **Strip Crowns**

These are commonly used crown forms filled with composite and bonded on the tooth however it is technique sensitive and any lapses in patient selection, moisture and hemorrhage control, tooth preparation and resin placement can cause crown failure.<sup>15</sup>

##### **Pedo Jacket**

This is bonded to the tooth and is handled similarly to a celluloid crown, only the jacket is made of a tooth colored polyester material. The crown is filled with resin material and left on the tooth after polymerization instead of being removed as the celluloid crown form. It does not split, stain or crack. Crowns can be trimmed with scissors.<sup>10</sup>

##### **New Millennium**

Similar in form to the pedo jacket and strip crown except that it is made of a laboratory enhanced composite resin material. This is filled with resin material and bonded on to the teeth. These crowns can be finished and reshaped but are brittle and expensive.<sup>10</sup>

##### **Art Glass Crowns**

Glastech is made of art glass, which is a polymer glass, which provides the natural feel, bond ability, and kindness associated with composite but the esthetics and longevity of porcelain. It is a new multifunctional methacrylate. The matrix has the ability to form three dimensional molecular networks with a highly cross linked structure. Such cross linked amorphous organic polymers are known as "organic glasses". The total filler content of art glass is only 75 % but when the matrix is cured the amorphous highly cross linked organic glass forms polymer glass which is a tough elastic material.

#### **CONCLUSION**

Esthetic dentistry focuses on function and beauty with the values and the individual needs of the patient involving an attitude, artistic ability, intuition and technical competence. Esthetic dentistry can provide the beautiful smile that both parents and children desire. Dentists who care for children and adolescents have the wonderful task and ability to create beautiful smile for these young patients. The advent of different techniques, devices, and materials helps in creating beautiful restorations which help children and adolescents

improve their self-image. As we know that the child's esthetics is the guide to the adult esthetics.

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#### Cite this article as:

Mathew Renu Ann. Esthetics in primary teeth. *Int. Res. J. Pharm.* 2013; 4(8):80-82 <http://dx.doi.org/10.7897/2230-8407.04813>

Source of support: Nil, Conflict of interest: None Declared