

# Emerging Trends in Children's Aesthetic Anterior Crowns

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## ABSTRACT

Children who lose their anterior teeth may experience aesthetic issues, neuromuscular imbalance with reduced masticatory efficiency, speech problems, the emergence of parafunctional habits, and psychological issues. There is a higher demand for treatments for ugly issues like caries, stained teeth, hypoplastic abnormalities, fractures, and missing teeth in youngsters as people become more aware of the cosmetic options available. The largest challenge, though, is deciding which therapy option is best for a given patient and circumstance. As a result, this review outlines the numerous recent developments in the field of anterior crowns in paediatric cosmetic dentistry, as well as their applications, benefits, and drawbacks.

**Keywords:** Anterior crowns, esthetics, pediatric dentistry.

## 1. INTRODUCTION

Premature tooth loss, which is regrettably a very regular occurrence in youngsters due to ignorance of oral hygiene practises and disregard for the maintenance of dental health, may hinder this gift from God. While the traditional theory put forth by Jean Piaget claimed that a child's sense of self and concern for appearance only came into being at the age of 8, recent research in the field of child psychology has refuted this theory, demonstrating that, with increased media exposure, children as young as 3-5 years of age have a sense of body consciousness. [1, 2, 3]

Pediatric dentistry has a wide range of options for cosmetic issues today. The biggest challenge, however, is deciding which treatment option is ideal for a given patient and circumstance. This decision is based on a number of variables, including the patient's age, the parents' motivation, the child's behaviour in the dental office, and the patient's socioeconomic level. On badly damaged teeth, early restorations mostly consisted of applying stainless steel crowns (SSCs) or bands. They could only be used on back teeth since they were ugly. Parents now demand a better aesthetic quality for the restoration of their children's carious teeth than they did twenty years ago. For anterior and posterior primary teeth, aesthetic full covering restorations are available, preserving their functions up until their healthy exfoliation. [4, 5]

## Classification of Esthetic Crowns

### Cemented crowns:

1. Metal Crowns with Facing[6],[7]
2. Zirconia Crowns
3. Nu-Smile Crowns
4. Kinder Crowns
5. Cheng Crowns
6. Pedo Pearls
7. Dura Crowns
8. Figaro Crowns.

### Bonded crowns:

1. Pedo Jacket Crowns
2. Polycarbonate Crowns
3. Artglass Crowns
4. Strip Crowns
5. New Millenium Crowns.

### Open Faced Stainless Steel Crown

SSCs can still provide a solid restoration when restoring anterior teeth that have significant cavities. Even when there is not much tooth left, this kind of crown may be fitted quickly and crimped on all surfaces. It is also resistant to breakage. The open-face SSC technique, a chairside process to enhance the aesthetics, can be used to alter the unappealing silver tint. However, it takes a lot of time, and the metal margin degrades the aesthetics. When putting the resin, bleeding must be tightly controlled because bleeding is frequently difficult to control following SSC tooth preparation [6, 7].

SSCs are occasionally used in anterior teeth because of the occlusion or significant caries, albeit they are less usually utilised in primary anterior teeth than in posterior teeth. The mandibular incisors receive SSCs more frequently because aesthetics is less obvious there. After 27 months, the retention rate for SSCs was reported to be 93%, and it appears that SSCs are kept on the job much longer than previous SSCs. A 330 bur is used to remove the metal off the crown's facial surface after the advised glass ionomer cement has dried and set. Etching and bonding are followed by placing resin that is tooth-colored. In comparison to the original silver metal hue, this open-face approach is less expensive and can produce a more aesthetically pleasing appearance [8, 9, 10].

To give patients another cosmetic choice for anterior restorations, Preveneered SSCs were launched to the paediatric dentistry market. On the facial surface of these crowns, prefabricated tooth-colored material is adhered to SSCs using composite resin material. With the help of the prefabricated aesthetic facial surface, the crown can be positioned in a region with suboptimal bleeding control, giving the area a white appearance. Produced as Cheng Crowns, Kinder Crowns, Flex White Faced Crowns, and Nusmile Signature Crowns.

The biggest issue with these crowns is the potential for incisal edge wear as well as partial or complete facial region fracture. It is challenging to fix the chipped area, therefore if parents or kids are worried about some metal showing, the entire crown must be replaced. A crimped area of the facial veneered will make the aesthetic facing easily fracture. As a result,

crimping the lingual region of the crown is necessary for crown retention. The prefabricated resin piece of the crown should not be pressed over the prepared tooth when applying it because it is brittle. It is advised to use glass ionomer cement for cementing these crowns in order to keep the crown in place while the cement cures. After 6 to 17 months, the retention rate for this kind of crown is said to be above 90% [11-14].

### Strip crowns

This kind of crown is made of celluloid crown shapes that serve as a matrix for filling with materials that are tooth-colored. Usually, resin-based composite is used to replace these crowns, giving patients more colour options to match their neighbouring teeth and achieving good aesthetic results. In younger youngsters, resin-modified glass ionomer cement has been utilised as a temporary repair. Technique matters when placing a strip crown because blood or saliva contamination is avoided by tightly controlling moisture and bleeding. To ensure proper bonding, there must be enough tooth structure left. A dental bur or a sharp blade can be used to quickly remove the celluloid form once the resin-based composite has polymerized.

It is crucial to use opaque resin or remove iodoform paste from below the cervical area when placing strip crowns over teeth that have undergone pulpectomy and been obturated with iodoform paste in order to prevent the yellow iodoform paste from showing through the strip crown from the facial surface. Similar to this, teeth that have had zinc-oxide eugenol applied as a restoration after receiving pulpal treatment should have a glass ionomer or resin-modified glass ionomer base applied over the zinc-oxide eugenol to prevent it from polymerizing when exposed to light [2, 6].

### Resin-Retained Crown Forms

There are two alternatives to the common strip crowns that cling to the tooth structure. One is composed of plastic that is tooth-colored. A crown made of resin material is placed to the tooth after it has been etched and glued. After polymerization, the crown form doesn't need to be removed. However, using a bur to reshape the crown is not an option because the heat will cause the plastic to deform. A finishing bur can be used to reshape the resin composite material used in the other option to give it a more aesthetically pleasing appearance. Forcefully pressing the crown against the tooth can result in the crown cracking or breaking if the tooth is not sufficiently reduced.

### Other Newer Crowns

**Pedo jacket crown:** The Pedo Jacket crown is constructed of resin-filled polyester in a tooth-colored colour. Apart from being taken out of the celluloid crown form once the luting resin cement has dried, it is left on the tooth following polymerization.

**New millennium crown:** The Success Essentials, Space Maintain Laboratory released them on the market. These crowns are constructed of laboratory-improved composite resin. They resemble the strip crown and Pedo jacket crown. The benefit is that a high-speed finishing bur can be used to polish and reshape them. However, drawbacks include the fact that they cannot be crimped, are quite pricey compared to other crown shapes, and are very brittle.

**Pedo pearl:** It is a novel kind of crown that is now being created and tried out in the real world. It is a metal crown form that resembles an SSC, but the epoxy paint has been totally painted to look like tooth enamel. Because the epoxy coating adheres to aluminium considerably better than stainless steel, these crowns are fashioned of aluminium rather than stainless steel. In the primary dentition, they act as the final permanent crown. Sahana et al. list a number of benefits, including ease of cutting and crimping without chipping and the ability to add the composite later. However, they are relatively soft and have little durability.

**Artglass crowns:** An anterior primary tooth restoration called an artglass crown, also referred to as Glastech, is made of artglass, a polymer glass. It is a brand-new multifunctional methacrylate with the capacity to create highly cross-linked, three-dimensional molecular networks. In comparison to strip crowns, they offer superior durability and aesthetics thanks to the use of micro-glass and silica as filler materials. It offers two benefits: the longevity and aesthetics of porcelains, as well as the bondability and feel of composites. [6, 7]

**Figaro crowns:** There are now more aesthetic complete coronal crowns available for paediatric patients, including Figaro crowns. These crowns are made of composite resin that is covered in either fibreglass or quartz filaments or fibres. The resin composite is built of a highly biocompatible medical-grade composite that is also used in pacemakers, ocular, and cochlear implant devices. Compared to stainless steel and zirconia crowns, the strength and biocompatibility of composite materials with some flexibility are significantly closer to tooth structure. The crowns accurately reflect a natural tooth's real anatomy. The Figaro crown respects the genuine tooth's architecture, giving an aesthetically pleasing result with cusps and grooves, while zirconia and SSC are limited in their ability to match the tooth's shape and more closely resemble hills and valleys. Figaro crowns may be modified for aesthetic, grinding, or eccentric occlusion reasons. No other premade crown provides for this feature. They offer excellent strength and the best value on the market while providing the unmatched elegance and beauty of an all-white crown. It reduces costs and saves time.

**Zirconia crowns:** Prefabricated zirconia crowns are an incredibly strong ceramic crown that provide more aesthetic and biocompatible full coverage for primary incisors and molars (EZPedo, Loomis, CA, USA; NuSmile ZR Primary Crowns, Houston, TX, USA; Hu-Friedy Mfg. Co., LLC, Chicago, IL, USA; Kinder Crowns, St. Louis Park, MN, USA; Cheng Crown, Exton, PA) They have anatomical contours, are free of metal, are entirely bio-inert, and are decay-resistant. By switching from one crystalline phase to another, zirconia has the unusual ability to resist crack propagation. The resulting volume increase blocks the break and stops it from spreading. The first paediatric zirconia crown to be made commercially available in the United States was EZ-Pedo (EZ-Pedo, Loomis, Calif., USA), which debuted in 2008.

The zirconia crown has several benefits over resin strip crowns, including superior aesthetics, complete coverage of the treated or carious tooth, no components that could debond, and a less sensitive cementation method. The zirconia restoration has a few drawbacks, including the necessity for greater tooth preparation than with a conventional preformed metal crown, the inability to modify the colour of the crown, the restricted ability to trim the crown, and the difficulty to adjust its shape. [17, 18] Zirconia crowns cost more money as well. Three distinct tooth-colored anterior crowns were used in a prospective study to measure parental

satisfaction. According to this survey, parents were most satisfied with zirconia crowns, followed by strip crowns and prefabricated SSCs. [19]

## 2. CONCLUSION

An effort has been made to assemble the many choices for attractive anterior crowns in paediatric dentistry practise through this review. Each of them has advantages and drawbacks of its own. As noted, there are numerous alternatives for treating carious teeth in young children, ranging from SSCs and their different variations to other aesthetic crowns including strip crowns, Figaro crowns, and zirconium crowns, which are becoming more and more popular. The choice and final result are influenced by the operator's preferences, parental aesthetic requirements, the child's conduct, socioeconomic situation, and moisture and bleeding control.

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