



Primary Anterior Teeth with Crowns

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ABSTRACT

In a dental office, young children's anterior teeth that have undergone cosmetic restoration are frequently seen. The majority of these young kids report having dental caries, rampant caries, caries from nursing bottles, cracked teeth from trauma in the anterior region, or even occurrences of dental caries. Esthetics is a key consideration when repairing the anterior teeth because it has an impact on children's self-esteem and confidence. Additionally, it might be difficult when treating children because of the smaller tooth size, larger pulp chambers, and behavioural concerns. To help the clinician treat deciduous anterior teeth, numerous types of crowns have been created and improved over time.

Keywords: Anterior, crowns, deciduous, pedodontics, primary.

INTRODUCTION

It can be difficult to restore the aesthetics of severely decaying primary anterior teeth. In a dental office, a clinician must restore the tooth cosmetically and control a small child's behaviour. It is very difficult to assume that a child will be the most cooperative in a dental clinic due to their early age and still developing cognitive skills. A child's anterior teeth are most frequently affected by dental caries, which can be observed as nursing bottle caries. Between the ages of 18 and 36 months, it is typically found in children [1]. The restoration for the anterior primary teeth

must be long-lasting, aesthetically beautiful, retentive, and powerful because it must last for around 8 years before the primary teeth start to fall out. Preformed polycarbonate crowns, acid-etched resin crowns, and stainless steel crowns are typically utilised to treat anterior teeth [2-6]. To replace primary anterior teeth, newer types of crowns have been developed, but each had its own set of benefits and drawbacks.

Crowns for Primary Teeth

In general, there are two categories for crowns that are used to reconstruct baby teeth. It is divided into cemented crowns

and bonded crowns depending on how it is cemented. Depending on the material, they can be divided into polymer crowns, zirconia crowns, veneered stainless steel crowns, and aluminium crowns with tooth-colored veneers. [7]

Stainless steel crowns

One of the first dental crowns used to reconstruct teeth was made of stainless steel [8]. They were first made available by the Rocky Mountain Company in 1947, and W. P. Humphrey popularised them in 1950. resilience and resistance to wear. However, because of their hue, they are really ugly [8]. The face cut-out stainless steel crowns and the resin-veneered stainless steel crowns are two variations of these sorts of crowns. In order to avoid the ugly silver hue of steel, composite material is substituted in the facial surface of stainless steel crowns with facial cut-outs or open faces. Although composite is applied anteriorly, metal borders are still visible, and the crown fabrication process is laborious.

Cheng crowns

Cheng crowns were created in 1982 by Peter Cheng. They are mesh-based, composite crowns made of stainless steel that have been light-cured composite on their faces. All anterior and posterior teeth can utilise them. Cheng crowns feature advantageous characteristics such colour stability, plaque resistance, and heat sterilisation capability without compromising the connection both power and colour [9]. The child may potentially receive it at a single visit. They frequently fracture during crimping, therefore they are highly expensive.

There are two types: zirconia crowns and traditional crowns [10-11]. The traditional crowns feature a stainless steel coping with a resin veneer, whereas the zirconia crown

is a precision-milled monolithic ceramic crown that is virtually invisible.

Dura crowns

High-density polyethylene veneer is used to make Dura crowns. When cement and crimping are used together, dura crowns have the advantage of having higher retention compared to nonveneered crowns. [12] These crowns can be festooned, labially and lingually crimped, and they can also be trimmed with crown scissors. It has a complete knife edge as well.

Kinder Crowns

Kinder Crowns were introduced in 1989 and are known for offering the most natural shades and contour for the patient. Kinder Crowns aims to provide the most natural, lifelike, and anatomically correct crown as possible. They have a highly characterized incisal edge, scientifically developed shades, and finely feathered margins. The finely feathered margins help create an esthetic emergence profile. These crowns are available for anterior and posterior teeth and they come as zirconia Kinder Crowns or a veneered Kinder crown. Zirconia Kinder Crowns have an internal retention system in the form of retention bands which locks the restoration to the tooth after cementation. These retention bands also increase the total surface area for the cement to bond to both the tooth structure and the crown. The veneered crowns are less time consuming to use and comparatively less technique sensitive. It has a strengthened stainless steel crown with feathered margins. It comes in two different lengths which is the regular length and short length for clinicians to choose based on their tooth preparations. The shades offered for the veneered Kinder Crowns are Pedro 2 and Pedro 1 shade. Pedro 1 is a lighter-bleached shade compared to Pedro 2 while Pedro 2 gives a more natural

look compared to the Pedo 1 shade. It has a universal contour, whereby the clinician is able to decide to make the crown a left or right by selectively rounding off the mesial or distal corner. Also, it has an incisal lock for better bonding and retention.

Pedo pearls

Aluminum is used to make pedo pearls, which resemble stainless steel crowns but are painted with epoxy paint that is tooth-colored. Aluminum is utilised because it adheres to epoxy paint more strongly, but because it is considerably softer, it could cause the epoxy paint to fade in regions with high occlusion. They are quite soft and not as robust, while being simple to cut and crimp without peeling and chipping. [13]

NuSmile crowns

In 1991, NuSmile crowns [14] were first made available. They are similarly composed of stainless steel but have a tooth-colored coating for an even more genuine appearance. When a crown is required for strength and to safeguard the remaining tooth structure, they are suggested for full-coverage restorations. The NuSmile Signature and NuSmile ZR are the two styles that are available. The anatomically accurate NuSmile Signature crowns, an alternative to the conventional stainless steel and composite strip crowns, with a natural tooth-colored coating. In contrast to NuSmile Signature, NuSmile ZR is made of a high-grade monolithic zirconia ceramic and offers improved aesthetic and durability.

The front crowns of NuSmile crowns are made with somewhat squared-off point angles in a uniform style. To make it a right- or left-sided crown, the clinician can round off either angle. They are available in light pedo or extremely light shades. Light crowns have a tendency to be more yellow than the original pedo hue.

Whiter Biter crowns

These crowns have a polymeric coating made of a hybrid polyester/epoxy material. [13] Despite being thin, the coating resists easy peeling or chipping.

Pedo Compu crowns

Pedo Compu crowns are stainless steel crowns as well as having a light-cured composite crown and a high-quality composite facing and mesh base. They offer good colour stability and are plaque-resistant, just like Cheng crowns [15].

EZ Pedo crowns

Drs. John P. Hansen and Jeffrey P. Fisher created EZ Pedo crowns. They are prefabricated zirconia crowns that do not include any metal. They are totally bioinert and offer exceptional aesthetics, strength, and durability. Additionally, it is resistant to plaque buildup and degradation. Zir-Lock ® ultrafeature, which works to expand the interior surface area to promote bonding, is incorporated into the design of EZ Pedo crowns. This is because zirconia doesn't flex, therefore naturally there will be places where the crowns are open in the subgingival margin. In essence, the Zir-Lock ® ultrafeature offers mechanical undercuts that lock the crown in place and aid in cement retention at the crown margins to prevent cement loss, microleakage, and also to keep hazardous germs out. The crowns are further treated with aluminium oxide blasting for extra adhesive capabilities in addition to the built-in retention.

Pedo natural crowns

The polycarbonate material used to make pedo natural crowns has several benefits, including more flexibility, higher durability with superior marginal integrity, and higher tensile strength.

Polycarbonate crowns

Another variety of premade full-coverage crowns constructed of heat-molded acrylic resin are polycarbonate crowns [16]. Preformed polycarbonate crowns can be more easily adapted to a prepared tooth since they are thinner and more flexible than acrylic resin crowns. It can be adjusted with pliers, is easier to trim, and has greater aesthetics.

Its placement is challenging, though, and its retention is low. These crowns should not be used in cases of bruxism, crowding, overbites, or insufficient tooth structure for retention. Thus, these crowns are no longer frequently utilised.

Strip crowns

Transparent celluloid crown forms for anterior teeth are manufactured and available as 3M™ ESPE™ Strip Crown Forms [17]. They were first presented in 1979 by Webber et al., and they are still one of the most popular crown forms today. The restoration material is automatically contoured by the crown, and when it is scraped off, it leaves a flat surface, eliminating the need for polishing. Composite is used to fill the crown forms, which are subsequently bonded to the tooth. Although they are more aesthetically pleasing, their retention depends on how much dental structure is still present after caries has been excavated. The use of resin composite makes moisture and bleeding control crucial because failure to properly apply the resin can result. [18] There are 16 distinct sizes available. Only the primary upper left and right central and lateral incisors are created with crown shapes, and there are four sizes available for each of these teeth.

Pedo Jacket

The United States' Space Maintainers Laboratory has introduced Pedo Jacket crowns. The copolyester material used to

create the Pedo Jacket crown has the principal tooth colour shade A2. One significant benefit of employing Pedo Jacket crowns is that following polymerization, the tooth-colored polyester "jacket" that is filled with resin will remain on the tooth rather than being removed like a strip crown. Although it is flexible and may have its length cut with scissors, a high-speed bur cannot be used. Compared to other crowns on the market, this is the only flexible or soft crown choice. Since the margins are finalised by manually eliminating extra material before polymerization, polishing is not necessary. The only size and colour offered, though, makes shade matching with neighbouring teeth a potential issue. Additionally, they have poor colour stability and show deterioration in areas of high occlusion. The most frequent instance of failure is when the filling material is removed from the Pedo Jacket shell while the Pedo Jacket shell is still attached to the tooth.

New Millennium crowns

These crowns are very similar to the Pedo Jacket and strip crowns except that they are made of a laboratory-enhanced composite resin material. They are very esthetic and unlike Pedo Jacket crowns, they can be finished and trimmed with high-speed bur. Additionally, they are resin-filled and attached to the tooth. [19-21]

Artglass® Pedo crowns

Glasstech Inc. has introduced Artglass® Pedo crowns, which are made of cross-linked three-dimensional polymers made of bifunctional and multifunctional methacrylates. These cross-linked polymers are known as "organic glasses," which resemble the warmth, bondability, and natural feel of composite materials while having porcelain-like aesthetics. In

comparison to composite strip crowns, the special filler materials used in glasstech, microglass and silica, are intended to offer improved durability and aesthetics. Bond failures are the cause of failures in these crowns. [20]

CONCLUSION

Primary anterior teeth with caries can be restored using a variety of techniques. Each of which offers unique benefits. Therefore, the choice of material depends on the clinician's inclination, expertise, and the child's aesthetic and functional needs.

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