

Esthetic Rehabilitation Of Decayed Primary Incisors Using Figaro Crowns And Strip Crowns¹Dr.Subhamay Chakraborty, ²Dr Abhishek Das, ³Dr Payel Agarwala, ⁴Dr.Shabnam Zahir, ⁵Dr.Pratik Kumar Lahiri,⁶Dr.Prof.Gautam Kumar Kundu^{1,2,3}Post Graduate Trainees, Department of Pedodontics and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India⁴Professor Department of Pedodontics and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India .⁵Reader, Department of Pedodontics and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India⁶Professor and Head, Department of Pedodontics and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India**Corresponding Author:** Dr. Subhamay Chakraborty, Post Graduate Trainee, Department of Pedodontics and Preventive Dentistry, Gurunanak Institute of Dental Sciences and Research, Kolkata, West Bengal 700114, India**Type of Publication:** Cases Report**Conflicts of Interest:** Nil**Abstract**

There are various types of restorations for complete crown coverage. These extracoronar restorative techniques include acrylic crowns, polycarbonate crowns, acid etched crown, stainless steel crown (SSC), open-faced stainless steel crown, pre-veneered stainless steel crown zirconia crown, etc. Each of these presents technical, functional or aesthetic advantages and disadvantages of its own. Recently, Figaro crown is the newest entrant in the extracoronar restoration of grossly decayed or endodontically treated primary teeth. The choice of full coverage restoration for primary teeth must provide an esthetic appearance in addition to restoring function and durability. This article presents an overview of the usage of Figaro crowns in pedodontics and a case report of a full coronal restoration of grossly decayed primary anterior teeth with Figaro crown and pedo strip crown.

Keywords: Esthetic, primary teeth, Figaro crown

Introduction

In the modern civilized cosmetically conscious world, well contoured and well aligned white teeth set the standard for beauty in children also. 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 effectively. It is becoming a greater concern as more emphasis is being placed on aesthetics. Esthetics, by definition, is the science of beauty: that particular detail of an animate or inanimate object that makes it appealing to the eye. ^[1] With the growing awareness of the aesthetic options available, there is a greater demand for solutions to unsightly problems such as nursing bottle caries, malformed and discolored teeth, hypoplastic defects, tooth fractures and bruxism in children. Esthetic restoration of primary anterior teeth can be especially challenging due to

the small size of the teeth, the close proximity of pulp to the tooth surface, relatively thin enamel and surface area for bonding, issues related to child behavior and the final cost of the treatment.^[2] Apart from a compromise in esthetics, dental destruction may also lead to the development of parafunctional habits like tongue thrusting and speech problems, psychological problems, reduced masticatory efficiency and loss of vertical dimension of occlusion.^[3] 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. The purpose of this case report is to describe the clinical application and rehabilitation of traumatized maxillary primary anterior teeth in a 4year 6 months old child using esthetic readymade Figaro crowns and pedo strip crowns.

Case Report

A 4 year 6 months old boy was reported to the Department of Pedodontics and Preventive Dentistry with a chief complaint of decayed teeth in primary upper front teeth region. On clinical examination, it was seen that 51, 52, 61, 62 was carious(Figure 1). Following the clinical and radiographic examination, the decision was made to give Figaro crown (Figaro crowns, Inc, Woodbury, MN (US), in relation to 51 and 61(Figure 2A) and pedo strip crown in 52 and 62(Figure 2B). Oral prophylaxis was carried out. and proper oral hygiene maintenance was given Figaro crown size was selected in such a manner that it mimicked as close to its natural counterpart by placing the incisal edge of the Figaro crown against the incisal edge of the tooth . The tooth was then prepared incisally using a medium wheel diamond bur in a high-speed handpiece. The length of the crown was first reduced incisally by 1-1.5 mm.The circumferential length of the tooth was approximately reduced by 1-1.5 mm by flame diamond bur and even the interproximal contact was opened with

the same bur. The incisal edges of the tooth were beveled and lingual surface of the tooth was reduced by football-shaped diamond bur. Similar procedures were performed to check the occlusion as of stainless steel crown and the crown covered the entire prepared tooth surface. Then the tooth was cleaned of saliva, blood or debris reasonably controlling gingival hemorrhage. Then the tooth surface was dried and cementation of the Figaro crown was done with Type 1 glass ionomer luting cement (figure 3). Crimping of the crown was not required, the crowns had gloves like fit.Finally, the area was cleaned up, flossing was done

Discussion

Esthetic restorations on primary teeth have long been a challenge for the pediatric dentist. A variety of restorative options using full coverage are available for anterior primary teeth such as Stainless steel Crown, polycarbonate crowns, pre-veneered Stainless steel crown, bonded resin strip crowns, zirconia crowns and recently introduced Figaro crowns. The most obvious advantage of Figaro crowns is their excellent esthetics, relative flexibility, and adjustability.

Stainless steel crowns are comparatively less expensive but require the use of an unnatural and non-esthetic silver color of steel for primary teeth restoration which limits its acceptability in many cases.

Dental crowns may also be made of molded Zirconium, another esthetic option but are quite expensive and their high cost limits its universal application reaching to the utmost general population. Zirconia esthetic crowns involve unnecessary excessive grinding of tooth structure to compensate for its lack of flexibility leading to some retention, adaptability and strength problems. The tooth preparation and crown fitting for zirconia crown takes more time, and therefore this crown not recommended for fearful children where cooperation becomes an issue in

longer duration procedures. Moreover, it is difficult to adjust a zirconia crown because it is ceramic and cannot be trimmed.^{4,5} Even occlusal and interproximal adjustments are not recommended, as these will remove a considerable amount of crown's glaze and possibly create a weak area of thin ceramic. Bleeding from the gum, due to anxiety or inflammation, may hinder the setting of the cement used to bond the zirconia crown to the tooth.⁶

Therefore there lies the scope of finding an excellent dental crown that serves the dual purpose of being economical and esthetic particularly for pediatric dentistry where cost may be an issue as the primary teeth will eventually fall out. In this search, Figaro crowns have come up with newer options.⁶

Figaro crown is a solution for restoration in pediatric and adult dentistry utilizing crowns, with an added cosmetic value not allowed with stainless steel crowns and not affordable with zirconia type crowns. Figaro crown utilizes either fiberglass or quartz filaments/ fibers embedded with an outer cosmetic composite resin material. This outer composite resin material is similar in structure observed on fiberglass dental posts already widely used in dentistry for endodontic purposes for decades. The outer surface provides the appropriate and excellent lifelike color and good mouthfeel. This crowns may include from 25-85% fibers with the remainder being resin and fillers.⁶

This resin composite is made out of high medical grade composite which is also seen in pacemakers, ocular and cochlear implant devices which is very much biocompatible. One of the remarkable advantages of this crown is the strength and biocompatibility with a degree of flexibility which is much closer to tooth structure than stainless steel and zirconia crowns. The fibers, one of the components of Figaro crowns are basically fiberglass but the variety of fibers are used including quartz fibers,

carbon fibers and aramid fibers such as Dupont Kevlar brand fibers. fiberglass herein is intended to encompass a wide range of fibers that may be woven into mesh sheets imparting strength. Figaro crown utilizes Titanium oxide, TiO₂ (0.3-1.2 micrometers in size). as its suitable colorant. Titanium oxide is typically from Iron oxide (FeO₂) may be used to impart a yellowing color.⁶

Figaro crowns are designed and engineered to look like a real tooth. Compared to the texture and color of a real tooth, Figaro crowns are incredibly similar by design. They have a satin finish in hand, but in the mouth, they have a gloss finish, just like a real tooth.⁶

Another significant advantage of Figaro crown is its replication of the true anatomy of a natural tooth. While zirconia and SSC are limited in mimicking the tooth's shape the newer Figaro crown embraces the tooth's true anatomy, producing an aesthetically beautiful result with cusps and grooves. The hallmark, stand out feature of Figaro crowns is its feature of

Adjustability for cosmetic, grinding and or eccentric occlusion purposes. This is a feature that no other pre-formed crown allows and has made it unique. Moreover, it is not technique sensitive and the technique of crown preparation, selection and delivery are similar to placing a Stainless Steel crown. Figaro crowns are designed to not be crimped due to their pre-beveled margins. Its FLEX – FIT technology ensures snug friction fit.⁶

Figaro crowns outperformed the competitors in all strength. Figaro crowns are the strongest ALL WHITE, METAL -FREE, BPA-FREE, pre-formed dental crowns on the market today. According to the manufacturers claim this crown made with epoxy and fiberglass with the standard force of 199 pounds. The fiberglass dental Figaro crown absorbed 2-2.5 times more the force the zirconia crowns withstood. Human bite strength on chewing yields about 72 pounds of force which is close to the failure

point for zirconia and well below the failure point of the inventive crown.⁶

Wall thickness of this crown is 0.5-1 mm which is very close to stainless steel and much thinner than other white crowns due to flex fit technology; preparation for tooth reduction is still similar to stainless steel with no subgingival preparation so the tooth preparation is less aggressive.⁶

Comparison of measurements of tooth reductions in various sides of different crowns .⁶

	Mesial	Distal	Fit	Overall reduction
SSC	0.23mm	0.23 mm	0 crimp	0.46 mm
FC	0.43 mm	0.43 mm	0 flex fit	0.86 mm
Zir	0.69 mm	0.69 mm	0.2 passive	1.58 mm

Radiographically, Figaro crowns are perfect to monitor the interproximal surfaces of the adjacent teeth for cavities. It works in no overlap technology, Figaro crown is more visible on an X-ray, leaving a more noticeable outline. The pulp also can be monitored entirely through the crown and surrounding the bone structures (great for cleft patients). this crown is also MRI friendly. Sterilization guide of figure crown is also very easy. ⁶

In this case Figaro crown served as the best alternative as the patient was extremely fearful, with minimal cooperation for tooth preparation and the chairside time was limited to less than 10mins. The parents and the patient were satisfied with the crown as it gave a life like an appearance in very short, hassle-free appointment time.

Figure



Figure 1 (A) preoperative photograph



(B) preoperative radiograph



(A)



(B)

Figure 2(A) Figaro Crowns (B) Strip Crowns



(A)

(B)

Figure 3(A) postoperative photograph (B) postoperative radiograph

Conclusions

Figaro crown provides the unsurpassed aesthetics and beauty of an all-white crown while offering superior strength and the highest value available in the market. It saves both time and money.

- It requires less tooth reduction than zirconia crown
- There is no need to wait for cement to set for delivery
- The outfit is impeccable(Flex Fit Technology)
- The bite/ occlusion should be checked prior to delivery
- Anatomy, aesthetics, and color that mimic a real tooth for only a few more dollars than stainless steel crown
- Efficient delivery with preparation to delivery achieved in less than 2 minutes. Dental providers are able to increase production without having to increase hours worked

References

1. Arens D. The Role of Bleaching in Esthetics. Dent Clin N Am 1989; 33:319-36.
2. Shah PV, Lee JY, Wright JT. Clinical success and parental satisfaction with anterior pre-veneered primary stainless steel crowns. Pediatr Dent 2004;26:391-5.
3. Usha M, Deepak V, Venkat S, Gargi M. Treatment of severely mutilated incisors: a challenge to the pedodontist. J Indian Soc Pedod Prev Dent 2007;25 Suppl: S34-6.

4. Karaca S, Ozbay G, Kargul B. Primary zirconia crown restorations for children with early childhood caries. Acta Stomatol Croat2013;47:64-71.
5. Soxman JA. The Handbook of Clinical Techniques in Pediatric Dentistry. Hoboken: Wiley-Blackwell; 2015. p. 47-50.
6. Figarocrowns.com