

AESTHETIC REHABILITATION OF DECAYED MAXILLARY PRIMARY INCISORS USING FIGARO CROWNS – A CASE REPORT

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ABSTRACT

Restoration of primary incisors, which have been severely damaged by extensive caries or trauma, is a difficult task for the Pediatric dentist. Primary teeth dictate the physical appearance, and their structural loss leads to compromised aesthetics, mastication, poor phonetics, development of aberrant habits, neuromuscular imbalance, and difficulty in socio- psychological adjustment of the child. This Case Report discusses the restoration of severely decayed primary maxillary incisors using Figaro crowns in a 4 years old male patient.

KEY WORDS

Deciduous tooth, Pediatric Dentistry, Aesthetic rehabilitation, Early childhood caries, Figaro crowns.

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INTRODUCTION

Dental caries and trauma are predominant cause for structural damage of anterior teeth in the primary dentition. Dental caries has been reported since prehistoric times and the present dietary course has substantially contributed to increased prevalence of this disease worldwide.¹ ECC is defined by the American Academy of Pediatric Dentistry (AAPD) as “the presence of one or more decayed (non-cavitated or cavitated lesions), missing teeth (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger”.² Early childhood caries (ECC) is a rapidly developing and progressing type of dental caries with distinctive pattern most commonly involving maxillary central incisors, lateral incisors and the maxillary and mandibular 1st primary molars. A significant correlation between ECC and prolonged bottle-feeding at bed time has been shown in most of the studies and this aggravated by less saliva production at night.³ ECC leads to compromised aesthetics, mastication, phonetics and produces a negative impact on psychological and social well-being of the child.⁴ In extreme cases, ECC can even lead to complete loss of the crown structure. Depending on the amount of tooth structure loss these teeth are treated either intra-coronally or full-coronally. In the last few decades, the new materials like polycarbonate crowns, strip crowns, art glass crowns, veneered stainless steel crowns and prefabricated zirconia crowns were introduced which can restore the carious teeth with sufficient tooth structure.

Recently, prefabricated Figaro crowns have been introduced for the treatment of primary teeth. The purpose of this case report is to describe the clinical application and the rehabilitation of decayed maxillary primary anterior teeth in a 4-year-old child using aesthetic Figaro crowns.

CASE REPORT

A4 years old male child accompanied by his parents reported to the Department of Pedodontics and Preventive Dentistry, with the chief complaint of decayed and painful teeth in the upper front region. His medical history was non-

contributory. Patient's mother gave a history of breast feeding for 1 year after which the child was bottle fed (including nighttime bottle feeding) till 3 years of age. On intraoral examination, he was found to have several carious lesions along with grossly decayed 52, 51, 61, and 62. Intraoral periapical radiographs revealed pulp involvement in relation to 51, 61, and 62. Diet analysis, counseling, and oral prophylaxis were carried out. All maxillary incisors presented with the remaining crown structure of 1 mm above the gingival margin with firm remaining tooth structure. The child's parents were informed about the treatment plan, its advantage and shortcomings, other treatment alternatives and consequences if treatment was avoided.

The treatment goal was to eradicate infected pulp and restore function and aesthetics by reconstruction of tooth architecture. Based on the clinical & radiological examination, the treatment plan was divided into following 2 steps for maxillary incisors:

Phase I: Restorative & endodontic phase

Gross carious tooth structure was removed with no. 330 round carbide steel bur. The pulp chamber was opened and working length was determined with a no. 10 K-file and IOPA. The root canals were cleaned with subsequently larger K files followed by copious irrigation using 0.5% NaOCl and normal saline. The root canals were dried with absorbent paper points and were obturated with metapex which was condensed with endodontic pluggers. The teeth were then sealed with GIC (Ketac Molar, 3M, ESPE, Minnesota, USA) [Figure]



Figure 1: Intra-operative photograph showing tooth preparation with 52, 51, 61, 62



Figure 2: Post-operative photograph immediately after placement of prefabricated Figaro crowns with 52, 51, 61, 62



Figure 3: Intra-oral photograph at 1 month follow-up

Phase II: Esthetic rehabilitation phase

During the second appointment, 1 week after the endodontic treatment, tooth preparation was done for placement of Figaro crowns (M DENTAL, INDIA), in relation to 52, 51, 61 and 62 [Figure 1]. The size of Figaro crowns were selected by measuring the mesio-distal dimension of the crown in the cervical region using divider and scale and then matching the dimension with the chart provided by the manufacturer. Tooth preparation was done by using a tapered diamond bur in a high-speed hand piece. Occlusion was checked to ensure there is adequate clearance from the opposing dentition. After a trial fit of the crown, adjustments were done for labial and lingual borders, with a high-speed fine diamond bur. The final passive fit of the crowns were confirmed and cemented with Type 1 GIC (Ketac 3M ESPE, St. Paul, MN, USA) [Figure 2]. The occlusion was checked, post-operative instructions were given and the patient was advised to come for regular check-ups. At the 1-month follow-up, the Figaro crowns showed superior aesthetics and harmony with the surrounding tissues [Figure 3].

DISCUSSION

Aesthetic rehabilitation of grossly decayed primary anterior teeth has always been a challenging task for the pediatric dentists. In the past, the only treatment option available for severely decayed teeth was to extract them and replace them with a prosthesis till the eruption of permanent successors. However, nowadays with the availability of numerous techniques and newer materials, we are

able to encourage the parents prevent extraction while making every effort to salvage these teeth till their natural exfoliation time.⁵ The main aim is to avoid extraction of these teeth and restore them so that child is able perform normal masticatory functions, and good aesthetics is maintained. A variety of restorative options are available for primary anterior teeth such as preformed SSC, open faced SSC, pre-veneered steel crowns, composite resin strip crowns, polycarbonate crowns, zirconia crowns and recently introduced Figaro crowns.⁶⁻¹⁰

Composite resin strip crowns have been considered to be the most aesthetic option for a long time. It is an affordable, inexpensive method, well supported by the child and effective in offering the aesthetics and functions. Use of composite resin offers great adhesion by means of micro mechanical bonding and formation of resinous tags. It also favours aesthetics making the tooth/restoration interface imperceptible providing good aesthetic results. However, strip crowns are technique sensitive as they require proper isolation.¹¹

The first commercially available pediatric zirconia crown was EZ-Pedo (EZ-Pedo, Loomis, Calif., USA).¹² The advantages of zirconia crowns include full coverage of the decayed tooth, excellent aesthetics and less technique sensitivity as compared to strip crowns. The tooth preparation for zirconia crown takes more time, hence these crowns are not recommended for children who are fearful and unable to cooperate for longer procedures. It is also difficult to adjust a zirconia crown because it is ceramic and cannot be trimmed. It is also very important that zirconia crowns should fit passively because they are made of solid zirconia and do not flex, attempt to sit with force will result in fracture and adjustment with bur results in microfracture.¹³

Another important concern with zirconia crowns has been its cementation. It is not possible to etch and bond zirconia because of lack of silicone of glass ceramic. Sandblasting is not recommended as it will introduce micro-cracks into the zirconia. Acid etching with either phosphoric acid or hydrofluoric acid will not alter the intaglio surface of the restorations and therefore have no effect on the overall retention of the restorations. Conventional or self-adhesive resin cements have been recommended as luting agents for zirconia crowns.¹⁰

Figaro crowns are the recent addition to full coverage pediatric aesthetic crowns. These crowns utilize either fibreglass or quartz fibres/filaments embedded with an outer cosmetic composite resin material. The strength and biocompatibility with a degree of flexibility are much closure to tooth structure than stainless steel and zirconia crowns. Figaro crowns allow adjustments for cosmetic, grinding and or eccentric occlusion purposes. The wall thickness of Figaro crown is 0.5-1 mm which is similar to stainless steel and is much thinner than other aesthetic crowns. Due to flex fit technology

Figaro crowns require less tooth preparation as compared to zirconia crowns. Also, cementation can be done with type 1 i.e. luting glass ionomer cement and there is no need to wait for the cement to set for delivery which makes the whole process very fast and efficient.

By keeping all these factors in mind, for this case considering the age of the child and the level of cooperation, Figaro crowns were preferred over any other aesthetic crowns to achieve better results.

CONCLUSION

The rehabilitation of primary anterior teeth has become an integral part of pediatric dentistry. Pulp therapy followed by aesthetic crowns offer an effective approach towards the aesthetic restoration of grossly decayed primary anterior teeth. Figaro crowns offer high-end aesthetics, superior durability, and easy placement compared to composite restorations and strip crowns. In near future it is expected that, prefabricated Figaro crowns could be an easy, restorative option to traditional composite restorations and strip crowns due to their unparalleled advantages. However, further long-term clinical evaluations are required to clarify the reliability and usefulness of Figaro crowns.

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