Case Report

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Esthetic Rehabilitation of Severely Mutilated Primary Maxillary Anterior Teeth Using Modified Esthetic Crowns: A Chair Side Technique

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ABSTRACT

Background: Dental caries is one of the most common chronic childhood disease. Esthetic re-construction of severely mutilated primary anterior teeth in case of early childhood caries has been a challenge to pediatric dentist. Technological advances in dental materials and the approach to their use need to be considered. This paper presents the clinical sequence of rehabilitation of primary maxillary anterior teeth. Endodontic treatment followed by crown reconstruction was done with strip crowns. Grossly destructed primary maxillary right central incisor was replaced with a fixed esthetic crown using fiber post anchorage from adjacent crown. The technique employed in this case is a simple chair side procedure and can be added as a potential treatment option for restoring primary incisors.

Keywords: Dental caries, Crowns, Rehabilitation.

INTRODUCTION

Early childhood caries is one of the most common childhood diseases in both developing and industrialized countries, where the malnutrition is common. It begins with white spot lesions in the maxillary primary incisors along the margin of the gingiva and the teeth most often involved are the maxillary central incisors, lateral incisors, maxillary and mandibular molars. In extreme cases, caries can progress leading to complete destruction of the crown [1].

Earlier the only treatment option for early childhood caries was to remove the affected primary teeth. Premature loss of primary anterior teeth can lead to phonetic challenges, reduced masticatory efficiency, space loss, development of parafunctional habits, lack of confidence and self-esteem leading to psychological problems in children[2].Satisfactory restoration of the primary anterior teeth to its previous form and esthetics presents a challenge to pediatric dentist, not only because of the available materials and techniques, but also from the point of view of pediatric patients who are usually among the youngest and least manageable group.

Esthetic restoration of primary teeth with conventional glass ionomer cement has demonstrated high failure rates. The use of composite strip crowns has been preferred and has performed well in-spite of its limitations, due to the type of material and size of the lesion, which may affect its stability, retention and marginal adaptation [3]. An ever increasing demand for aesthetics has led to innovations and development of minimally invasive adhesive restorations using

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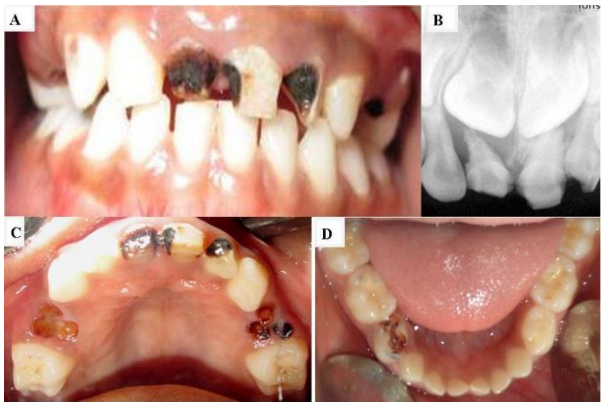

Fig 1: Pre operative radiographs and pictures.

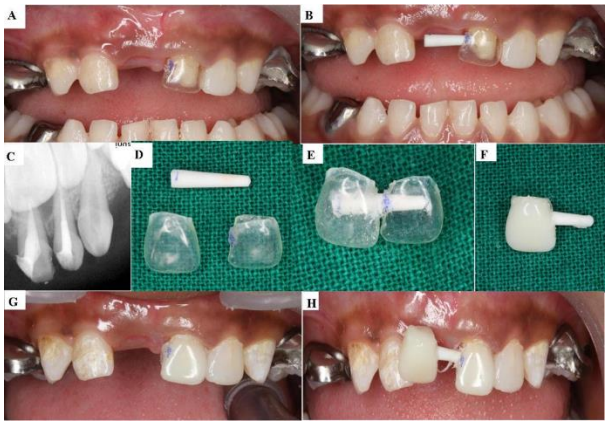

Fig 2: Intraoperative pictures.

Fig 3: Post operative photographs.

glass fiber reinforced composite posts. It is translucent, disappears with in composite without show through, offering excellent esthetics [4].

This article presents a clinical case report of an early childhood caries patient where glass fiber reinforced composite post is used to replace the mutilated and extracted primary anterior teeth by utilizing anchorage from adjacent teeth.

CASE REPORT

Parents with a six-year-old boy, reported to the Department of Pediatric and Preventive Dentistry with the chief complaint of poor facial appearance due to discolored and worn out front teeth. Patient's medical history was noncontributory. Patient's mother gave a history of breast feeding for 1 year after which the child was bottle fed for 3 years. Intraoral examination revealed a complete set of primary dentition. It was observed that primary maxillary central incisors, maxillary left lateral incisor, maxillary right first molar, maxillary left first molar, mandibular right first molar were affected by dental caries [Fig 1A]. Maxillary right and left first molars were root stumps and were indicated for extraction followed with bilateral band and loop space maintainer [Fig 1C]. Mandibular right first molar was grossly carious and indicated for pulpectomy followed by a stainless steel crown [Fig 1D]. Maxillary left central and lateral incisors were grossly carious to the extent that only 2-3mm of crown structure above the gingival margin was intact and were indicated for pulpectomy followed with strip crowns. Maxillary right central incisor was indicated for extraction due to root resorption as observed on the intra-oral peri-apical radiograph [Fig 1B].

The management was carried out in two phases.

Phase I

Pulpectomy of maxillary left central and lateral incisors, mandibular right first molar followed by extraction of maxillary right central incisor. [Fig 2C].

Phase II

Esthetic rehabilitation of the mutilated incisors was done

- Strip crown (3M, ESPE, MN, USA) best suited for maxillary left lateral incisor was selected, trial fitted, bonded and light cured followed by occlusal adjustment on removal of the strip crown.
- Post space was created in maxillary left central incisor by removing 2mm ZnoE from coronal chamber.

- Appropriate strip crowns (3M, ESPE, MN, USA) for maxillary left central incisor were selected and trimmed. [Fig 2A].

- Additional strength for maxillary right central incisor pontic was attained by passing glass fiber reinforced composite post from mesial aspect of maxillary right central incisor strip crown to mesial aspect of maxillary left central incisor strip crown [Fig 2B,2D,2E].

- Coronal enamel of maxillary left central incisor was acid etched for 20 sec, rinsed with water and air dried followed by application of bonding agent which was light cured.

- Both maxillary central incisors strip crowns were filled with composite resin A1 shade.

- Final seating of maxillary left central incisor strip crown and placement of maxillary right central incisor strip crown along with fiber reinforced composite post was done [Fig 2E, 2F, 2G, 2H].

- Tooth alignment was rechecked and light cured followed by occlusal adjustment on removal of strip crowns.

- Post operative photographs [Figure 3A, 3B, 3C, 3E] and radiographs were taken as a final step.

The major advantage of this technique is immediate functional recovery and improved esthetics thus boosting the psychological confidence of the child [Figure 3D, E]. Periodic recall at one, three and six months revealed the absence of any discoloration, secondary caries, or change in gingival and periapical conditions, confirming the efficacy of the used technique.

DISCUSSION

The loss of maxillary incisors in early childhood may lead to psychological disturbances and effect the child self esteem and socialization during the important phase of development. In severely mutilated primary anterior teeth direct restorative procedures do not always give satisfactory results as the teeth have short and narrow crowns leading lesser surface area for bonding, a pulp chamber that is relatively large and enamel that is inheritantly difficult to etch due to its aprismatic structure. A combined technique of post and composite, with final morphology achieved with strip crowns, was found to be a simple and effective technique which was in accordance with the technique described by Weber and coworkers. Various kinds of root posts have been used in pediatric dentistry. A resin composite post building up directly, alpha or omega shaped orthodontic wires, stainless steel prefabricated posts, nickel chromium cast posts, natural teeth from tooth bank or reinforced fiber [5, 6].

The use of omega shaped stainless orthodontic wire as an intracanal post is simple but the wire is unable to adapt adequately to the canal form as it is not the exact copy of the canal. Among the esthetic posts, polyethylene fiber posts have less flexural strength when compared to glass fiber reinforced composite posts. The biological posts require the availability of tooth and are still subject to new studies for future conclusions.

Glass fiber reinforced composite posts are new to the pediatric world and can be used as an alternative to the other post systems. This material is a translucent, semi manufactured product made of glass fiber [7]. These posts are essentially silanated glass fibers that are pre impregnated and these fibers are linked to each other by linear poly methyl methacrylate (PMMA) chains and cross linking monomers of bisGMA. It can be cured with light cure composites and its translucency makes it an aesthetic choice.

In the present case, an effective alternative fixed functional space maintainer was used for restoring 51. Kargal et al in a clinical trial concluded that glass fiber reinforced composite post space maintainers functioned well during a short period. Post space was made in the mid coronal section of 61 to enhance maximum adhesion, durability and also to provide mechanical support [8]. The technique employed in this procedure is very simple and has shown promising results and has presented pediatric dental world with an additional treatment option.

CONCLUSION

Teeth lost in the anterior region infrequently require space maintenance, but demand rehabilitation from a psychological point of

view. This method of intervention using glass fiber reinforced composite post to support composite strip crowns on severely mutilated primary anterior teeth is a valuable clinical procedure.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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