

**RESTORING SEVERELY DECAYED PRIMARY ANTERIOR TEETH
USING OMEGA POSTS AND FIBRE POST SYSTEMS A CASE REPORT**

CASE REPORT

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ABSTRACT:

Background :Caries in very young children known as Early Childhood Caries (ECC) may be defined according to the American Academy of Pediatric Dentistry “as the presence of one or more decayed, missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger”. Early childhood caries mainly occurs in maxillary primary anterior teeth and if untreated it can lead to pulpal involvement and destruction of coronal tooth structure, these teeth are difficult to restore. In majority of cases, the destruction of the tooth structure involves almost the entire crown, leaving just the root and little crown portion, hence, only dentine left for bonding of the restorative materials **Observation and result** :The newly introduced fibre posts are aesthetic, easy to use and are available in different sizes. In the present study, for purpose of comparison, both types of posts (Fibre and omega shaped stainless steel wire posts) were used to restore the grossly destructed primary maxillary incisors. This also ensured that both types of posts being in the same oral cavity

would be subjected to similar dietary patterns, oral hygiene conditions and occlusal forces. Fibre posts proved to have better retention, which can be due to the chemical and mechanical bonding to the tooth surface. So the fibre post systems seems to be a suitable alternative for the omega posts, due to the better retention and more aesthetic appearance as compared to omega shaped stainless steel wire posts. **Conclusion:** Restoring teeth after endodontic procedures is requisite for multiple reasons and this can be achieved with ease if proper retentive post is selected. This case gives us an idea that the retention of fibre posts is better than the omega shaped stainless steel wire post as well as fibre posts are better aesthetically.

Abbreviations used: ECC, Early Childhood Caries;

Introduction

Caries in very young children known as Early Childhood Caries (ECC) may be defined according to the American Academy of Pediatric Dentistry “as the presence of one or more decayed, missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger” [1]. Early childhood caries mainly occurs in maxillary primary anterior teeth and if untreated it can lead to pulpal involvement and destruction of coronal tooth structure, these teeth are difficult to restore. In majority of cases, the destruction of the tooth structure involves almost the entire crown, leaving just the root and little crown portion, hence, only dentine left for bonding of the restorative materials [2]. Early loss of the primary anterior teeth may bring about functional problems in mastication and phonetics, lead to the development of parafunctional habits such as tongue thrust, and impair the aesthetic appearance [3].

Formerly, the treatment of the severely damaged primary anterior teeth was based on the removal of these teeth. However, the consequences were dramatic, namely loss of vertical dimension of occlusion, tongue thrusting and mouth breathing habits, which are all the known sources of future malocclusion [4]. Teeth are severely decayed, endodontic treatment and placement of intra-canal posts or retainers become necessary before crown restoration. Posts may be constructed of a variety of materials, including resin composite, metal, and biologic material [5].

In 1990, Duret *et al.* described a non-metallic material for the fabrication of posts based on the carbon-fibre reinforcement principle. Laboratory-based studies have shown that these posts have a high tensile strength and modulus of elasticity, similar to dentine [6]. Another simpler method to provide support to fabricate strip crown is to use Omega loops, which provide a quick, inexpensive and efficient option. The technique of placing Omega loops is quiet simple; it involves the placement of an omega shaped stainless steel wire extension into the entrance of the root canal prior to restoring the crown with a compomer material.

The aim of the present study was to evaluate and compare the efficacy of fibre post with that of omega shaped stainless steel wire posts in restoring severely destroyed maxillary primary anterior teeth.

Observations and result:A 5-years-old male patient reported to the Department of Pedodontics and Preventive Dentistry, Ahmedabad Dental College and Hospital, Ahmedabad with a chief complaint of pain in lower left back tooth region since the past 5 days. Patient's grand mother gave a history of breast feeding for 1 year after which the child was bottle fed for 2 and a half years. Intraoral examination revealed a complete set of deciduous dentition with caries involvement in relation to 55, 54, 53, 52, 51, 61, 62, 63, 64, 65,71,72,73, 74, 75, 81, 82, 83, 84 and 85 (Figure 1, 2, 3).

Intraoral periapical radiographs revealed pulp involvement with 54, 53, 52, 51, 61, 62, 64, 71, 72, 73, 74, 75, 81, 82, 83, 84, 85. Diet analysis, counselling, and oral prophylaxis were done. 54, 64, 74, 75, 84 and 85 were grossly carious and were indicated for pulpectomy followed by a stainless steel crown. 52 and 62 were indicated for pulpectomy, followed by glass fibre-reinforced composite resin posts in and composite build up. 51 and 61 were indicated for pulpectomy, followed by omega posts and composite build up.



Figure 1: Preoperative Intraoral photograph of the maxillary arch

Figure 2: Preoperative Intraoral photograph of the mandibular



Figure 3: Preoperative Intraoral photograph

Treatment of the maxillary anterior was done in two phases:

1. Endodontic phase
2. Restoration phase

Endodontic phase:

Pulpectomy was performed in relation to 51, 52, 61, 62 under local anaesthesia. Caries removal and pulp tissue extirpation was done. The canals were prepared under constant normal saline irrigation, dried with paper points, and the canals were filled with metapex (calcium hydroxide and idoform combination) paste.

Restorative phase:

The crowns of all the maxillary anteriors were severely destructed so for development of proper crown structure, it was decided to restore 51, 61 with fibre post followed by composite restoration and 52, 62 by omega posts followed by composite build up.

Post Insertion

A post space was prepared 2 weeks after endodontic treatment was completed. About 4 mm of the metapex cement was removed and a layer of light cured restorative Glass Ionomer Cement was placed. A 0.7 mm stainless steel wire was bent into a loop in such a way as to allow the ends to be hooked in the entrance of the root canal. The incisal end of the loop of the wire projected 2-3mm above the remaining root structure. The root canal and the remaining coronal tooth structure were etched with 37% phosphoric acid for 20 seconds. Then the bonding agent was placed and cured for 20 seconds. Composite restorative material of the selected shade was

placed in the canal. The loop was inserted in relation to 52, 62 and the fibre reinforced post were inserted in relation to 51, 61. The fibre post and the composite were cured for 60 seconds. The final finishing and polishing of the restoration was done and occlusal interferences were removed (Figure 4). This restorative phase also helped for the psychological rehabilitation of the patient (Figure 5).



Figure 4: Crown build-up



Figure 5: Complete oral and psychological rehabilitation

Discussion

The aim of the present study was to compare the evaluate the clinical efficacy of omega posts compared with fibre post systems. The clinical and radiographic examinations proved both techniques are efficient. Restoration of deciduous anterior teeth with severe loss of coronal structure is a challenging task for the dentists. The main aim is to avoid extraction of these teeth and restore them, so that child is able to perform normal masticatory function and good esthetics is also maintained. To provide good restoration is not always easy as in most of the cases there is very minimal tooth structure left, and also due to the fact that adhesion of bonding agent to primary teeth is not very satisfactory [7]. The use of an intracanal post in endodontically treated teeth improves the retention of definitive restoration [8].

There is a variety of root posts used in pediatric dentistry, each having its own advantages and disadvantages. A resin composite post is build up directly, resin composite short post placement, alpha, or omega shaped orthodontic wires, stainless steel pre fabricated posts, nickel-chromium cast posts with macroretentive elements, natural teeth from a tooth bank or reinforced fibres. Although metal posts are indicated for primary teeth but because of their color metal post do not meet the aesthetic requirement. The use of omega-shaped stainless orthodontic wire as an intracanal post is also simple introduced by Mortada and King [5]. The biggest advantage is that wire does not cause any internal stresses in the root canal as it is incorporated in the restorative material mainly and it can be done with minimal chair side time [9]. However, metallic posts such as omega shaped stainless steel wire post requires masking with an opaque resin. This may in turn affect the final appearance of the restoration [10].

The newly introduced fibre posts are aesthetic, easy to use and are available in different sizes. In the present study, for purpose of comparison, both types of posts (Fibre and omega shaped stainless steel wire posts) were used to restore the grossly destructed primary maxillary incisors. This also ensured that both types of posts being in the same oral cavity would be subjected to similar dietary patterns, oral hygiene conditions and occlusal forces. Fibre posts proved to have better retention, which can be due to the chemical and mechanical bonding to the tooth surface. So the fibre post systems seems to be a suitable alternative for the omega posts, due to the better retention and more aesthetic appearance as compared to omega shaped stainless steel wire posts.

Conclusion

Restoring teeth after endodontic procedures is requisite for multiple reasons and this can be achieved with ease if proper retentive post is selected. This case gives us an idea that the retention of fibre posts is better than the omega shaped stainless steel wire post as well as fibre posts are better aesthetically.

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