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RESEARCH ARTICLE

ESTHETIC RECONSTRUCTION OF A GROSSLY DAMAGED PRIMARY ANTERIOR TOOTH USING A PEDO POST

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ABSTRACT

Aesthetic outcome of a grossly decayed or broken down tooth can be greatly improved by the judicious use of pedo posts. There are various types of posts that can be easily customized in a simple chair side maneuver. Yet, posts are not regularly used in primary teeth and there are very few documented cases of successful use of pedo posts. This is a case report of a modified omega loop used to restore a fractured anterior tooth.

Key words:

Pedo Posts,
Modified Omega Loop,
Gamma Loop,
Endodontic Treatment,
Pedo Strip Crowns.

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INTRODUCTION

It is challenging for pediatric dentists to restore decrepit teeth. The goal of dental treatment is to reinstate the lost tooth structure in order to maintain function and prevent changes in mastication, phonetics, development of parafunctional habits and psychological problems that will impact a child's progress. Clinicians have made several attempts to restore such grossly carious primary anterior teeth with different and innovative root canal retentive post and core systems so that the primary teeth can be retained until their replacement by successors.

CASE REPORT

A 3 year old male patient reported to the department with pain in the upper front tooth region since the past few days after a fracture of the front tooth. Patient gave history of trauma 3 days ago in the same region due to a fall, which resulted in a tooth fracture. Pain was sharp, lancinating type and spontaneous in onset and moderate in intensity that relieved on medication only.

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Clinical examination revealed an Elli's Class III fracture of 51. On palpation no abnormality or mobility was seen. Tooth was not tender on percussion. Radiographic evaluation showed pulpal involvement (Fig:1). The clinical and radiographic findings indicated acute irreversible pulpitis. Based upon the findings a decision of pulpectomy followed by a post and pedostrip crown w.r.t 51 was taken. After optimal obturation with Metapex was achieved (Fig:3), about 3-4 mm of the root canal filling material from the cervical end was removed from the canal. 1mm of Type II Glass ionomer cement (GIC) button was placed over the obturating material in the root canal. The modified omega loop was inserted before the GIC set such that about 3mm was below the cemento-enamel junction within the root canal and embedded in GIC(Fig:4). The modified omega loop had been fabricated using twisted flex wire which was twisted till taut with an artery forceps and looped using universal pliers (Fig:2). The rest 2 mm of the loop that remained above the CEJ was built up using composite. Shade selection of the composite was done in the daylight. After the GIC had set, the root canal and the remaining coronal structure was etched with 37% phosphoric acid for 15 seconds. Then the bonding agent was applied and cured. Composite restorative material of the selected shade was placed in the canal and cured as per manufacturers' instructions. The composite was light cured.



Figure 1. Pre-operative IOPAR



Figure 5. IOPAR of omega loop in the canal



Figure 2. Omega loop



Figure 6. Post-operative IOPAR



Figure 3. Per-operative IOPAR of Obturation with radiopaque material



Figure 7. Post-operative IOPAR after crown built up using Pedo-strip crown



Figure 4. Omega loop placed



Figure 8. Post-Operative crown built up

A strip crown was used and the crown was reconstructed. Two-third of the strip crown was filled with selected shade of packable composite (Tetric N Ceram, IvoclarVivadent). The occlusion was checked and after the removal of any interference, final finishing and polishing of the restoration was done as shown in Figure 8.

DISCUSSION

Ideal properties of post for a deciduous tooth

An ideal post and core for a primary tooth should be resorbable, but it should provide adequate retention and resistance. Post should be well adapted to the inner dentinal wall as it is one of the factors governing the retention of the restoration. Indication & contraindications of using post in primary teeth include the following:

Indicated when half of the crown structure has been lost. But, at least 1 mm of tooth structure should be present supragingivally (Wanderley, 1999). The main reason for using a post is to re-establish the shape and form of a severely decayed or fractured maxillary anterior tooth crown while it provides support for the final restoration. The posts also increase the resistance of the restored teeth to mechanical load (Guimaraes *et al.*, 1999). The morphology and histology of primary teeth that provide lesser surface area for bonding, contain relatively large pulp chamber, and an aprismatic enamel which is difficult to etch pose a challenge to successful rehabilitation of primary teeth (Papathanasiou *et al.*, 1994). The destruction of the tooth structure frequently involves the entire coronal structure leaving maybe only the root dentine for bonding of the restorative material and thus increasing the failure rate. Extension of post in the primary root canal should be such that irrespective of the type of post being used, intracanal placement is around 3mm. That is, the cervical one-third of the canal so it does not interfere with deciduous tooth root resorption and permanent tooth eruption (Kapur *et al.*, 2005). Innovations for short retentive posts are needed in primary dentition due to the physiological resorption that occurs in primary dentition, unlike the post and core used in adult dentition.

CLASSIFICATION OF POSTS FOR PRIMARY TEETH

Based on design

- Threaded
- Non-threaded
- Alpha
- Half omega shaped
- Omega shaped
- Modified anchor shaped
- Gamma shaped

Metal posts are made up of stainless steel wire of 22 gauge/0.7 mm. They are rigid but not aesthetic. Retention of metal posts can be enhanced by addition of serrations in the post. They may interfere with physiologic root resorption if they are placed beyond 3 mm in the canal.

Omega post

The use of Omega loop was introduced by Mortada and King (2004) as an intracanal retainer in the year 2004. Its advantages are that they are processed quickly; the 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. Coronal extension provides retention to coronal restoration (Kumar, 2014).

Disadvantages

- The adhesion between Omega wire and dentinal wall is mechanical.
- The wire adaptation to the internal walls is insufficient to resist dislodgement of the wire, and may lead to radicular fracture in case of excessive masticatory forces.
- Hence retention of Omega loop is less compared to Glass Fibre Reinforced Composite.

HALF OMEGA POSTs are the ones in which Stainless steel wire is contoured to mimic half an omega to make the post. Serrations are added to increase the probable surface area for the restorative material and to improve the stability and durability of an aesthetic restoration (Srinivas, 2011)

Conclusion

For placing a post in primary teeth 3 mm radicular extension and 2-3 mm coronal extension of post should be used to prevent interference in shedding procedure. Omega post and its modifications are the most frequently used posts in the primary teeth. Thus, were used in this case. Fibre posts can also be used effectively in primary teeth. Amongst various available fibre posts, polyethelene fibre post has proved to be better. Biologic post can also be successfully used in the primary teeth if tooth bank facility is available. Selection of luting agent completely depends on type of post. Coronal restoration should be done by using direct or indirect restorative techniques. Full coronal restoration is must after placement of post.

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