

# RESTORATION OF PRIMARY ANTERIOR TEETH AFFECTED BY EARLY CHILDHOOD CARIES USING MODIFIED OMEGA LOOPS - A CASE REPORT

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## Abstract

Early childhood caries mainly affects maxillary primary anterior teeth and it can lead to early pulpal involvement and destruction of coronal tooth structure. These teeth are always difficult to restore. This case report deals with the successful use of modified omega loops and strip crowns to restore maxillary primary teeth affected by early childhood caries.

**Key words:** - Early Childhood Caries, Omega Loops, Strip Crowns.

## Introduction

Early childhood caries is common chronic childhood disease. According to American Academy of Paediatric Dentistry, Early childhood caries (ECC) is defined as the presence of one or more decayed non cavitated or cavitated lesions, missing due to caries or filled tooth surfaces in any primary tooth in a child seventy one months of age or younger.<sup>1</sup>

The prevalence is 1-12% in developed countries and 70%, while in India a prevalence of 44 % has been reported for caries in 8 to 48 months old.<sup>2</sup>

The etiology of early childhood caries is multifactorial. The main culprit is prolonged bottle feeding containing sweetened milk, fruit juice, honey dipped pacifiers, and Diet rich in sugars and improper oral hygiene are the other factors which are responsible to develop early childhood caries.

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. Thus in majority of cases the only option left is to extract these teeth.<sup>3</sup>

Early loss of these teeth have deleterious effects like space loss, speech problems, chances of developing tongue thrusting habit, and can also have psychological effects.<sup>3,4</sup>

To restore such severely damaged teeth with pulpal involvement is always a challenging task for the dentist. Root canal treatment followed by crown placement is generally the treatment of choice in such kind of cases.

Crown placement is not always easy as in most of the cases coronal portion is severely destroyed. Previously metal posts, fiber-posts, composite restorations has been tried.<sup>5,6</sup> 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.

Several case reports and studies have demonstrated good results with long term durability when Omega loops were used to restore severely broken down primary teeth.<sup>7</sup>

## Case Report

A 4 year old male child reported to the Department of pediatric dentistry with decayed teeth affected by early childhood caries (ECC). Intra oral examination revealed carious lesions in tooth number 55, 54, 52, 51, 61, 62, 64, 65, 74, 75, 85.

Coronal portions of 52,51,61,62 were severely damaged and most of the tooth structure was lost with pulpal involvement. (Figure 1)



Figure 1: - Pre-operative View

Treatment plan was formulated after doing routine detailed investigations and radiographic evaluation for this case, it was decided to restore 55, 54, 64, 65, 74, 75, 85 using restorative glass-ionomer cement as not only it provide good adhesion but it also have the property of fluoride release, which seems beneficial in this case, root canal treatment was planned for pulpally involved teeth with fabrication of strip crowns over them.



Figure 2: - Pulpectomy of 51, 52, 61, 62.

Pulpectomy was performed on 51, 52, 61, 62 under local anaesthesia, rubber dam isolation was done. Caries removal was done and pulp tissue was extirpated. The canal was prepared till size #45 under constant irrigation with sodium hypochlorite and physiologic saline, dried with paper points, and canals were filled with zinc oxide eugenol cement. (Figure 2)

As there was very little coronal tooth structure left to build strip crowns, it was decided to use omega loops to provide a base over which composite strip crowns can be fabricated. In order to place omega loops in the canals approximately 4 mm of zinc oxide cement was removed from the coronal end and sealed with 1mm of glass-ionomer cement.

A 22 gauge (0.7mm) stainless steel wire was used to make omega loops, and the free end of the omega loops was pressed and released inside the canal to provide anchorage, flowable composite was also inserted inside in the canal and light cured for better adhesion and stability. (Figure 3)



Figure 3: - Insertion of Omega Loop

Then over the incisal end of omega loops composite strip crown was placed and occlusion checked for any interferences and polished using composite finishing strips. (Figure 4)



Figure 4: - Crown build-up.

Fluoride varnish therapy was also given, along with dietary counselling and importance of maintenance of good oral hygiene was described to the patient and parents.

Recall visits was performed 3 ,6, 12 months, one year follow up showed good durability of strip crown and oral health showed marked improvement and no new carious lesion was noticed.

## Discussion

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 perform normal masticatory function and also good esthetics is 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<sup>8</sup>.

Many studies advocate the use of non-metallic posts such as ceramic post , polyethylene glass-fibers, carbon fibers etc<sup>9,10</sup>, but in such kind of cases but it has some disadvantages like, technique sensitive, time consuming , multiple steps and expensive.

A simpler and effective method is to use an omega loop which was introduced by Mortada and King<sup>11</sup>. In this technique omega loops wire extensions are placed at the depth of around 3-4mm inside pulp chamber and the projected portion of the loop is used for retention of the coronal restoration. 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.<sup>11</sup>

In this case report, a simple and effective method for reconstruction of severely destroyed primary anterior teeth has been used. This technique can be done directly in mouth and does not involve any laboratory procedures. The complete procedure can be completed in one appointment and easy for the paediatric patient. As the core length of the omega loop which is placed intra-canal is around 3mm thus occupies only the cervical one-third of the canal and does not interferes with deciduous tooth root resorption and permanent tooth eruption.

Omega loop technique can be an easier, simpler and inexpensive treatment of choice for severely damaged primary anterior teeth.

## Conclusion

The modified omega loops presented in this case report provided good esthetics and masticatory function to the child and whole procedure proved to be simple and easy to perform. However, its long time success, and its durability in children having para-funcntional habits like bruxism, deep bite etc. is a matter of further research.

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