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## RESEARCH ARTICLE

### MULTIPLE CUSTOM-MADE HALF OMEGA POST FOR ANTERIOR ESTHETIC REHABILITATION OF EARLY CHILDHOOD CARIES- A CASE REPORT

<sup>1</sup>Dr. Savitha Sathyaprasad, <sup>2</sup>Dr. Krishnamoorthy S.H., <sup>3,\*</sup>Dr Vinisha Vinod and <sup>4</sup>Dr. Anjali, N.

<sup>1</sup>HOD & Senior professor, KVG dental college & Hospital

<sup>2</sup>Professor, KVG dental college & Hospital

<sup>3</sup>Post graduate, KVG dental college & Hospital

<sup>4</sup>Post graduate, KVG dental college & Hospital

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#### ABSTRACT

Premature loss or severely destruction of upper primary anterior teeth by early childhood caries (ECC) is a challenge for the pediatric dentist. ECC can be a particularly virulent form of caries, beginning soon after dental eruption, developing on smooth surfaces, progressing rapidly, and having a lasting detrimental impact on the dentition. In the anterior region, aesthetics is an important concern along with function and space management. Tooth rehabilitation in this region becomes fundamental. The intention of this case report was to present a case of a 4-year-old boy came with a chief complaint of decay on the upper front teeth in the last 2 year. Radiographic examination reveals pulpal involvement wrt 51,61,52,62 and shows good length root. Based on the clinical findings we came to the diagnosis of early childhoods caries type III and stage IV. Hence the patient was planned for pulpectomy followed by half omega post and strip crown. The child was very happy and satisfied regarding all functions of teeth, like mastication, speech, and esthetic

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## INTRODUCTION

The healthy oral cavity is a main requirement for beautiful looks. Although caries is preventable to a great extent but still it is the most common chronic disease of childhood. According to the American Academy of Paediatric Dentistry, ECC is 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<sup>(1)</sup>. The prevalence of ECC is estimated to range from 1 to 12% in infants from developed countries. The etiology of ECC is multifactorial and has been well established. Inappropriate use of baby bottle has a central role in the etiology and severity of ECC. Child's quality of life can be seriously affected by severe caries because of twinge and discomfort which could lead to defacement, self-esteem, communication behaviour<sup>(2)</sup>. The early loss of primary anterior teeth may result in reduced masticatory efficiency, loss of vertical dimension, development of parafunctional habits (tongue thrusting), speech problems. Severe early childhood caries is a devastating condition for both the child undergoing structure in order to maintain function and prevent changes in mastication, phonetics, development of parafunctional habits

dental treatment and the concerned parents. It is also challenging for pediatric dentists to restore badly broken-down teeth. The goal of dental treatment is to restore the lost tooth and psychological problems that will affect a child's self-esteem. Various aesthetic options are available for restoring or replacing it and it depends on the clinician to make the best decision for each individual situation. This rehabilitation should provide good longevity, without interfering with the normal eruption process. A case of 4-year-old child is being presented here who had lost most of the coronal tooth structure of his upper anterior teeth due to ECC. The treatment was done by pulpectomy followed by placement of custom made half omega post in canal and building of coronal part with strip crown.

## CASE REPORT

A 4-year-old child accompanied by his mother reported to the Department of Pedodontics and Preventive Dentistry in K V G Dental College Hospital, with a chief complaint of decayed upper front teeth in the last 2 year which was associated with pain a year back but was asymptomatic at the time of examination and she also gave a history of breast feeding for 1 year after which the child was bottle fed for 3 years. Patient's main concern was on aesthetics.

\*Corresponding author: Dr. Vinisha Vinod,  
Post graduate, KVG dental college & Hospital

The child was shy and the behaviour of the child was negative according to Frankel behaviour rating scale. The patient's general health status and past medical history were satisfactory. On diet analysis Food score was barely adequate, Sweet score was watch out zone. On intraoral examination (Fig 1) there was revealed multiple caries lesion with respect to 51,52,61,62 and 85.



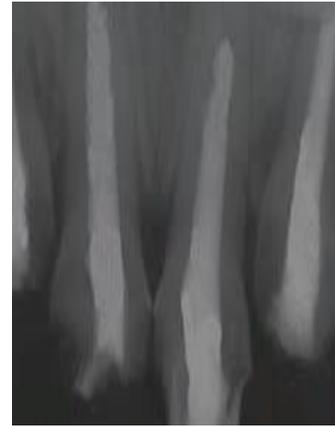
**Fig.1. Pre op picture**

Coronal portion of 5,52,61,62 was severely damaged and most of the tooth structure was lost with pulpal involvement. The periapical radiograph revealed pulpal involvement and half more than 2/3<sup>rd</sup> of the root length (Fig 2).



**Fig.2. iopa 51,52,61,62**

Based on these findings, we came to the diagnosis of diagnosis Early childhood caries Type III Stage IV After taking parents' consent, diet analysis, counselling, and oral prophylaxes were performed. Pulpectomy procedure was performed i.r.t. 61,62,51,52 using metapex (Fig 3) followed by custom-made half omega-shaped post with 0.7mm stainless steel orthodontic wire and serrations were done to increase the stability of the aesthetic restoration and the mechanical retention of the core (Fig 4). About 4 mm of the metapex was removed from the coronal end of the root canal, and 1 mm of glass ionomer cement (GIC) was placed. The incisal end of the wire projected 2-3 mm above the remaining root structure. After GIC set, the canal was prepared to get a space of about 3 mm. The prepared post space was then cleaned with saline, air-dried. The root canal was etched with 35% phosphoric acid for 20 s, followed by bonding agent was placed and cured for 20 s. The flowable composite was injected into the root canal along with the loop (Fig 5).



**Fig.3. Obturation done using metapex**

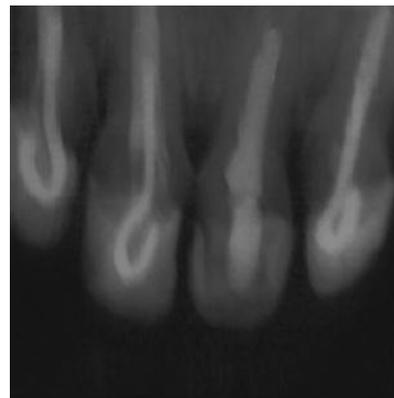


**Fig 4. half omega shaped post**



**Fig 5: placement of omega metal post**

The composite was light-cured for 40 s. Crown was reconstructed using strip crown (Fig 6 & 7).post op instructions were given there was a chance of loss of restoration due to trauma or biting on hard foods, so the parents were advised that the child should avoid hard food. The child was very happy and satisfied regarding all functions of teeth, like mastication, speech and esthetic



**Fig.6. Post op radiographic image**



Fig.7. post of image after crown build up

## DISCUSSION

Early childhood caries describes dental caries in the primary dentition of young children that occur abruptly, spread widely and rapidly, and is burrowing in nature resulting in early involvement of the dental pulp<sup>(3)</sup>. In the present case report the patient was on high cariogenic diet, they were advised to lower the frequency of carbohydrate ingestion rather than reducing the total carbohydrate intake. Although it is neither feasible nor desirable to eliminate sugar completely from the diet, we recommended that between meal snacks be supervised by parents and that, if possible, sugar intake be limited to meal times<sup>(4)</sup>. They were also asked to include cheese in their diet as eating cheese will bathe the teeth in calcium, phosphate and bicarbonates, which in turn increase the pH of plaque and foster remineralization.

The decision to restore the teeth using strip crowns with half omega shaped metal posts was based on the extensive damage that had occurred to the tooth structure. The main indication for using post is to re-establish shape and form of a severely decayed or fractured maxillary anterior teeth crown with half of crown structure lost or at least 1mm of tooth structure remain supragingival to provide support for final restoration. Various posts which can be used in primary teeth are metal post which are custom made and prefabricated post. Custom made posts are omega post and its modifications, alpha post, gamma post, modified anchor shaped post and prefabricated post are metal post, reverse metal post. Mortada and King have shown success with the use of direct composite restoration reinforced with mechanically retained orthodontic wire<sup>(5)</sup>. The biggest advantage is that 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. Custom-made half omega-shaped post made with 0.7 mm wire with serrations done to increase the potential surface area for attachment of the restorative material and consequently increase the long-term stability of an esthetic restoration. Various studies on half omega post were done and they explained. the modified omega loop with serration used in this case report demonstrated good retention, good esthetics, and masticatory function to the child. However, it is a long-time success, and its durability in children having parafunctional habits like bruxism, deep bite, etc., is a matter of further research<sup>(6)</sup>. Shah S et al explained that for placing 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 post in the primary teeth<sup>(7)</sup>.

The direct composite resin restoration using a custom-made post with orthodontic wire used in this case report demonstrated good retention and esthetics. It was easy to perform chair side and benefited the child immensely<sup>(8)</sup>. Eshghi et al conducted a 1 year clinical study and conclude that the metal post technique is acceptable for the restoration of severely damaged primary anterior teeth<sup>(9)</sup>. Vorse KS et conducted an invitro study and they found that resin short post with omega-shaped stainless-steel wire showed a statistically significant high fracture resistance and retention when compared with ribbon fiber post. They came to the conclusion that insufficient fiber length and shape of the fiber post had reduced its resistance to fracture, whereas resin short post and omega-shaped wire have got synergistic action when they are used together resulting in increased resistance and retention to fracture<sup>(10)</sup>. Problems while placement of post in primary teeth are, the morphology and histology of primary teeth present a less surface area for bonding, relatively large pulp chamber, and a prismatic enamel which is difficult to etch. The destruction of the tooth structure frequently involves the entire crown leaving just the root dentine for bonding of the restorative material and thus increasing the failure rate difficulty in extension of post length due to short length of primary roots & primary tooth roots can resort over a period of time. Due to short post length, retention is compromised chances of loss of crown due to trauma

## Conclusion

ECC is a multifactorial disease that has numerous biological, psychosocial and behavioural risk factors. Children having caries in their primary teeth are more likely to develop caries in their permanent teeth. Although ECC can be arrested, early detection is of paramount importance. Thus, complete oral rehabilitation with effective preventive measures advocated during their childhood will help to reduce future risk for caries.

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