

Full Mouth Rehabilitation of a Four Year Old Child with Severe Early Childhood Caries: A Case Report.

Dr. Mallayya C. Hiremath¹, Dr. SK Srinath², Dr. Deepthi M³, Dr. Imy angluba⁴

¹(Associate Professor, Dept. of Pedodontics and Preventive Dentistry, Government Dental College and Research Institute, Fort, Bengaluru -560002, Karnataka, India.)

²(Professor and head, Dept. of Pedodontics and Preventive Dentistry,, Government Dental College and Research Institute, Fort, Bengaluru -560002, Karnataka, India.)

^{3,4}(Post Graduate students, Dept. of Pedodontics and preventive dentistry, Government Dental College and Research Institute, Fort, Bengaluru -560002, Karnataka, India.)

*Corresponding Author: Dr. Mallayya C. Hiremath

Abstract: Early childhood caries (ECC) is a serious, painful dental disease affecting the infants and children. It is one of the most chronic disease of childhood and it is five times more prevalent than asthma. It is of multifactorial etiology. Children affected by ECC have compromised function and esthetics. Management of ECC consists of multidisciplinary approach involving pedodontists, paediatricians, dietician and a counsellor. This paper describes the comprehensive management of a four year old child with severe ECC.

Keywords: Dental caries, esthetics, gropper's appliance, space maintainer.

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I. Introduction

American academy of pediatric dentistry (AAPD) defines early childhood caries (ECC) 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 71 months of age or younger.¹ ECC, known previously as baby bottle caries, nursing bottle caries, baby bottle tooth decay, or nursing decay, is a relatively new term that describes rampant dental caries in infants and toddlers.² The extent of decay of teeth in ECC is usually so severe, that by the time the child is brought to the dentist, much of the anterior clinical crowns are decayed or lost.^{3,4} The greatest challenge of pediatric dentist is the esthetic and functional rehabilitation of toddler with ECC.

When extraction of primary incisors is necessary, many parents will seek an esthetic solution to replace the lost teeth.⁴ Early loss of teeth can also be quite psychologically disturbing to the young child especially when he views himself as being different from his peers.⁵ Anterior dental disharmonies can interfere with normal tongue placement which then can lead to the development of maladaptive articulatory habits.⁶

Restorative options for management of anterior tooth loss include both removable and fixed appliances. In situations where a fixed appliance is desired, there are several options to be considered: (1) a Nance-type appliance with acrylic pontics processed to the lingual arch,⁷ (2) porcelain fused to metal bridge utilizing full coverage of abutment teeth, and (3) acid-etch retention of crowns and pontics.^{8,9} This paper describes a modified design of gropper's appliance.

II. Case Report

A four year old male child reported to the department of pedodontics and preventive dentistry with the chief complaint of pain and swelling in the lower left back tooth since a week. Patient had undergone cleft palate surgery when he was 18 months old and was under speech therapy. Child had a history of bottle feeding up to three years. Family history was non-contributory. On intra oral examination, root stumps were noted in relation to 51,52,61,62,54,64,74 (figure-1). Moderate multisurface dental caries were noted in relation to 53, 63,55,65,85. Dental caries with pulpal involvement were noted in relation to 71,72,73,75,81,82,83,84. To assess the entire dentition a diagnostic panoramic (OPG) radiograph (figure-2) was made and clinical findings were correlated with radiographic findings. Thus, a diagnosis of severe early childhood caries was made.

Parent's consent was obtained after explaining the type, time and cost of the treatment. Diet history evaluation was done which revealed the use of bottle feeding with sweetened milk and consumption of sweet snacks 4-5 times in a day. In the emergency phase of treatment plan pulp therapy of 75 was performed and stainless steel crown (SSC) was placed in subsequent visit. Diet counselling and parental counselling was done. In subsequent visits pulpectomies were performed with 31,32,33,41,42,43, followed by placement of fiber posts and then the coronal restorations were completed using strip crowns. SSCs were also placed on 55,65,85 (figure-

3 & 4). Remaining carious teeth 53,63,84 were restored with glass ionomer restorative material. Grossly decayed teeth 51,52,61,62,54,64,74 were extracted and space maintainers were planned. After evaluation, a positive oral hygiene was noted. A band and loop space maintainer was given in relation to 74. A fixed functional, esthetic space maintainer (figures-3, 5 & 6) was given in relation to maxillary incisors, to aid in speech and mastication (Modified gropper's appliance).

III. Discussion

The main aim of dental treatment is to reduce the pain, restoration of masticatory and speech efficiency and prevention of abnormal oral habit development and restoration of esthetics. Space maintenance in the anterior maxillary region is not generally necessary. In most instance, the placement of an anterior primary fixed appliance is an elective procedure and is based strongly on parental desires. At the present time there is no evidence that prosthetic appliances might restrict a child's oral growth (Dyson JE; 1988). Also, Scures CC (1967) has reported a minimal (<0.5mm) increase in inter-canine growth between the age of 2-4 years and it is clinically insignificant.⁴

There have been few studies on the effect of premature primary anterior tooth loss on speech development. Of the six components necessary for development of normal speech (respiration, phonation, resonance, articulation, neurologic integration, and audition), articulation is the component most affected by the presence or absence of teeth.¹⁰ The s and z sounds in particular may be defective since their articulation necessitates developing a narrow air stream against the incisal edges of the anterior teeth.¹¹

A factor that may not be too well understood in relation to phonetics is that of tooth proprioception. The process of perception involves the sensory innervation of the periodontal membrane, epithelial surfaces of the oral cavity, muscles of mastication, muscles of the tongue, and the TMJ joints.¹²

Modified gropper's appliance consists of SSCs/band adaptation on 55 and 65. Making alginate impression and pouring it with dental stone. The appliance was fabricated similar to Nance palatal arch. Acrylic teeth were attached to the arch wire using a pink color acrylic resin and gingival extension were made. The appliance was then trimmed, polished and cemented. Oral hygiene instructions were given and the patient was recalled periodically for follow up.

One of the most important and valid reasons for replacing missing incisors is to restore a natural and pleasing appearance and thus provide an opportunity for normal psychological development.¹³ As children grow and develop, they continually formulate a mental image about their bodies. However, body image alterations bear little significance to the very young,^{13,14} the loss of seven teeth at such a young age most likely would have had a negative effect on this patient's self-esteem and image. Indeed, the patient became very attached to the appliance.

IV. Conclusions

Complete oral rehabilitation resulted in relief of pain, improvement in speech, masticatory efficiency, esthetics and psychological benefits.

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Figure-1: Preoperative photograph showing multiple decayed primary teeth (severe ECC).

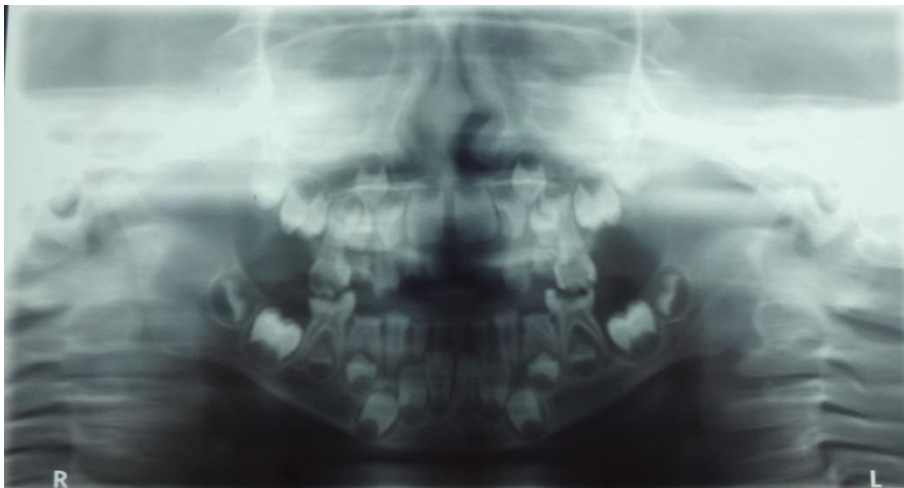


Figure-2: Preoperative diagnostic panoramic radiograph (OPG) showing multiple decayed teeth with pulpal involvements.



Figure-3: Postoperative photograph showing SSCs on 55, 65, and fixed functional, esthetic space maintainer in relation to 51,52,61,62.



Figure-4: Postoperative photograph showing strip crowns in relation to 71,72,73, 81,82,83 and SSCs on 85, and crown and loop space maintainer in relation to 74, 75.

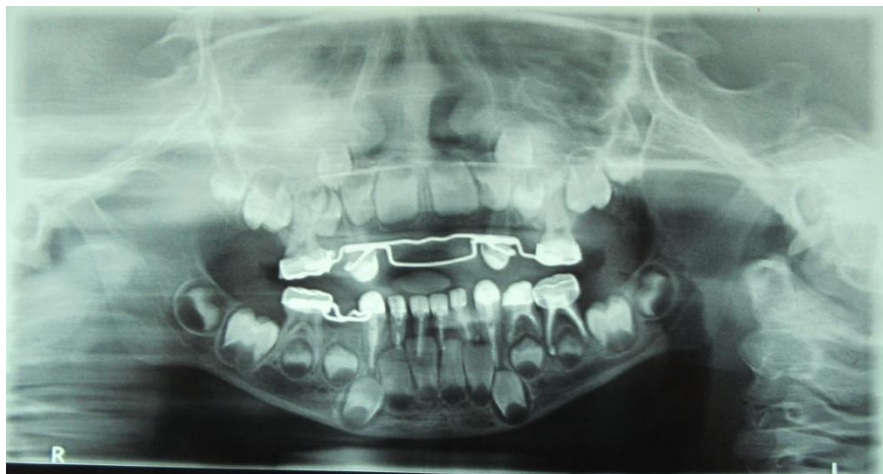


Figure-5: Postoperative panoramic radiograph (OPG) showing full mouth rehabilitation.



Figure-6: Postoperative photograph showing full mouth rehabilitation.

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