

FULL MOUTH REHABILITATION IN A CHILD WITH ECC-A CASE REPORT & REVIEW



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INTRODUCTION

An emerging awareness of the nature and severity of early childhood caries (ECC) and its serious implications for systemic health has made it imperative that all health professionals engage more actively in oral health promotion and disease prevention. Health professionals can promote the oral health of infants and children by learning about oral development, oral disease, oral hygiene, fluoride, and nutrition and by sharing information with parents. Health professionals can help ensure that infants and young children receive the care they need by referring infants to a dentist for an oral examination within 6 months of the eruption of the first primary tooth, and no later than age 12 months, and by establishing the child's dental home¹. They can also provide parents with anticipatory guidance on oral development, caries transmission, eating habits, fluoride, non-nutritive sucking habits, bottle use, tooth eruption, and gum/tooth cleaning^{2,3}. Since dental caries is an infectious disease that may be transmitted from the mother or another intimate caregiver to the infant, anticipatory guidance should be provided to pregnant women, new mothers and care givers.

Nursing Bottle Caries, a form of ECC, affect the primary teeth of infants and pre-school children. In their severest form, they sometimes appear as quickly developing lesions on the surface of teeth with low susceptibility to caries, following the usual eruption sequence. Typically, the maxillary primary incisors are hit the hardest, followed by the first primary molars. The mandibular incisors normally are spared because they are covered by the tongue during suction movements and are thus buffered against cariogenic liquids. Saliva produced by nearby sublingual and submaxillary glands also buffers the mandibular incisors against acids produced by dental plaque. When the mandibular incisors are affected it is usually an indication that the caries are caused by inappropriate pacifier use, or simply that the child has a classic case of rampant caries.

The esthetic restoration of severely mutilated primary anterior teeth had been a challenge for the dentist for a long time, not only because of the available materials and techniques but also because the children who require such restorations are usually among the youngest and least

manageable group of patients⁴. This case report describes the treatment of a four and a half yr old Nursing Bottle caries patient with mutilated maxillary incisors with composite resin using a omega loop post made with 0.7-mm stainless steel wire to increase the potential surface area for attachment of the restorative material and consequently increase the long-term stability of an esthetic restoration, as well as pulpectomy and other restorative procedures in the needful teeth.

CASE REPORT

A four and a half year old male child had come to the department with the chief complaint of decayed teeth in the mouth. On Clinical examination, the patient had grossly destructed upper incisors. Moderate dental caries was seen on the labial aspect of lower incisors and occlusal surface of 55. The posterior teeth of both upper and lower arches were also grossly destructed with pulpal involvement. After the clinical examination, the mother was enquired about the history of his feeding practices. She mentioned that the child was breast fed up to 2 yrs of age. She also mentioned that the child used to sleep with the bottle filled with milk in his mouth. With the history and the clinical examination, the child was diagnosed to be a case of Nursing Bottle Caries.

A treatment plan of rehabilitating the full mouth was made. The Child seemed to be co-operative and hence pharmacological methods of behaviour management were not thought of. Pulpectomy was done in the anterior teeth 51,61,62 and in the posterior teeth 54,64,65,74,75,84,85. Restorations were done in the remaining carious teeth. Esthetic restorations of the anterior teeth were planned. A 0.7mm stainless steel wire was bent in the shape of a small omega loop and was placed inside the canals of the anterior teeth. When the try-in was proper, they were luted to the canal with a flowable composite resin. Then the tooth structure was built with Restorative composite resin, finished and polished. Stainless steel crowns were placed on the posterior teeth after pulpectomy.

The child and the parents were happy and satisfied with the total rehabilitation of the child's mouth.



Pre-op



Omega loop posts bonded to the root canal



Pulp therapy-upper Posteriors



Stainless steel crowns-upper posteriors



Stainless steel crowns lower posteriors



Post-op



Happy Child

DISCUSSION

Early childhood caries (ECC), which is the currently accepted term used to describe dental caries occurring in infants and young children, has recently received great attention from various publications in the literature³⁻⁵. This term embraces many other terms, such as nursing bottle caries, nursing caries, baby bottle tooth decay, baby bottle caries and baby bottle syndrome.

American Academy of Pediatric Dentistry (AAPD)¹³ considers ECC to be the presence of any carious surface of a primary tooth, missing (due to caries) or filled, in children younger than six years. Based on this definition, the expression severe ECC (S-ECC) was adopted in lieu of rampant caries, in the presence of at least one of the following criteria: (i) any sign of caries on a smooth surface in children younger than three years old; (ii) any smooth surface of an anteroposterior primary tooth that is carious, missing (due to caries) or filled, in children between three and five years old; and (iii) decayed, missing, and filled teeth index (dmft) equal to or greater than 4 at the age of 3 years, 5 at the age of 4 years, and 6 at the age of 5 years.

ECC is a multifactorial, transmissible and infectious disease⁷. The microflora, substrate, host and saliva are key factors involved in the pathogenesis, together with the immature host defense system and developing bacterial flora. These factors interact in a certain period of time, causing an imbalance in the demineralization and remineralization of the tooth surface and the adjacent plaque layer (biofilm)⁸⁻¹⁰.

ECC is characterized by extensive, rapidly progressive, deep decay of the upper primary incisors and often the primary molars. These decayed teeth may become necrotic and cause alveolar abscesses to develop, leading to a cellulitis of the surrounding soft tissues.

The abscesses can be painful and cause harm to underlying, developing permanent teeth. Worse yet, ECC can cause disfigurement and interfere with a child's ability to eat. As a matter of fact, left untreated, ECC can lead to serious illness, infection, and pain, which in turn can impair weight gain and speech while leading to learning and eating problems. As a result, ECC can increase school absenteeism and negatively affect children's and families' quality of life⁵. Some studies have shown that the bacteria can cause early damage to the blood vessels of the heart, leading to early cardiac diseases⁷.

Prevention of ECC begins with intervention in the prenatal and perinatal periods⁵. Women should be advised to optimize nutrition during the third trimester and the infant's first year, when enamel is undergoing maturation. Enamel hypoplasia is common in children with low birthweight or systemic illness in the neonatal period⁷. There is considerable presumptive evidence that malnutrition/undernutrition during the perinatal period causes hypoplasia. A consistent association exists between clinical hypoplasia and ECC⁶. Cariogenic bacteria (specifically mutans streptococci) may be transmitted to the child from the mother. Hence decreasing the mother's/primary caregiver's/ sibling(s)' mutans streptococci levels may decrease the child's risk of developing ECC. Motivational interviewing may help direct parents to improve home oral health habits. Frequent bottle feeding at night, ad libitum(at will) breast-feeding, and extended and repetitive use of a no-spill training cup are associated with, but not consistently implicated in, ECC⁵. While ECC may not arise from breastmilk alone, breast-feeding in combination with other carbohydrates has been found to be highly cariogenic⁵. The severity of ECC is mainly associated with poor feeding habits.

When very young children have not been the beneficiaries of adequate preventive care and, subsequently, develop ECC, therapeutic intervention should be provided by a practitioner with the training, experience, and expertise to manage both the child and the disease process.

Because of the aggressive nature of ECC, treatment should be specific for each individual patient. Areas of decalcification and hypoplasia can rapidly develop cavitation. The use of anticariogenic agents may reduce the risk of development and progression of caries. Interim therapeutic restorations (ITR), using materials such as glass ionomers that release fluoride, are efficacious in both preventive and therapeutic approaches. Pulp therapy can be done in the pulpally involved teeth followed by stainless steel crowns. Stainless steel crowns are also indicated to decrease the number of tooth surfaces at risk for new or secondary caries and are less likely than other restorations to require retreatment. Esthetic restorations of the anterior teeth are suggested to ensure confidence and prevent the psychological trauma to the child.

Low levels of compliance with follow-up care and a high rate of children requiring additional treatment also can influence a practitioner's decisions for a more definitive restorative management of ECC.

The extent of the disease process as well as the patient's developmental level and comprehension skills affect the practitioner's behaviour guidance approaches. To perform treatment effectively and efficiently while instilling a positive dental attitude, the practitioner caring for a child with ECC often must employ advanced behaviour guidance techniques. These may include protective stabilization and/or sedation or general anesthesia⁷. The success of restorations may be influenced by the child's level of cooperation during treatment. General anesthesia may provide optimal conditions to perform restorative procedures for children with ECC.

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