

Full Mouth Rehabilitation of A Child with Early Childhood Caries: A Case Report.

Abstract:

Early childhood caries is a multifactorial disease that severely degrades the primary maxillary incisors and molars in a child aged 71 months or younger. It can cause reduced masticatory efficiency, loss of vertical dimension, development of speech problems, esthetic-functional problems such as malocclusion and space loss, and psychological problems that can compromise the behavioral development of the child. The treatment of severely decayed primary teeth presents a special challenge to pediatric dentists. The present case report describes the oral rehabilitation of a 5-year-old male patient with type II ECC whose teeth were restored using various treatment modalities including preformed space maintainers, preformed zirconia crowns, fiber post, SSC, pulpectomies and composite restorations..

Key-words: Early Childhood Caries, Stainless-steel crowns, Zirconia crowns, Fibre-post, Dental caries

Introduction:

The 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] Untreated ECC can irreversibly destroy dentition, cause abscesses, and may deteriorate oral health quality, which may impede the child's daily activities. Children with known risk factors for ECC should have care provided by a health professional with the training and expertise to manage the child and the disease process.[2]

Certain features specific in children with ECC are the presence of high levels of Streptococcus mutans in the bacterial plaque acquired early from their mothers or other family members/ other people and prolonged and high consumption of sweetened drinks. Other risk factors associated with ECC include prolonged breast feeding, nocturnal bottle feeding, poor oral hygiene, social-economic status, and parents' level of education. Therefore, it is necessary for the dentist to recognize the risk factors associated with caries in both infants and preschool children and decide on the treatment plan accordingly.[3]

The present case report describes the oral rehabilitation of a 5-year-old child with type II ECC with the aim of treating the carious lesions, establishing healthy occlusion and improving the aesthetic appearance of the teeth using newer treatment modalities to reduce the likelihood of related psychological problems so as to rebuild the self-esteem, to prevent the development of malocclusion and various parafunctional habits.

Case Report:

A five-year-old boy reported to the department of Pediatric and Preventive Dentistry, accompanied by his mother. The chief complaint of the child was discoloration in the upper and lower front and back teeth region for the last 1 year. It was informed that oral hygiene was performed by the child, once a

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day in the morning with fluoridated toothpaste and doesn't use any other oral hygiene aids. The child eats a non-vegetarian diet and gave a history of frequent snacking in between meals. No known allergy to drugs or any food was found. No abnormal oral habits were present. The mother informed that the child was breastfed until two and a half years of age. The mother reported that her pregnancy was uneventful and the child was born full-term by normal delivery. The patient's general health status and past medical history were non-significant.

Oral Examination:

On intraoral examination, buccal mucosa, tongue, the floor of the mouth, and palate appeared normal. Gingiva appeared reddish pink with a firm and resilient consistency. No abnormal oral habits were found. A total of 20 teeth were present in the oral cavity. Teeth 55, 54, 53, 52, 51, 61, 62, 63, 64, 65, 74, 75 & 84 were found to be carious. Root stumps were present w.r.t 85. Mandibular anterior teeth were caries-free. (Figures 1 & 2). This was a case of type II ECC affecting maxillary incisors and molars without involving the mandibular incisors.

Management of the Lesion:

A treatment plan was decided and accordingly explained to the parent and consent was obtained. It was the child's first dental visit, so he was gradually introduced to the dental equipment and the child's behaviour was managed with the help of audio-visual aids and tell-show-do technique. The patient's oral hygiene was assessed and home care instructions regarding diet counselling and oral hygiene maintenance were given to the mother. Class 1 caries were restored using composite restoration w.r.t 55 & 65. On the second visit, the food diary was checked, the patient was found to adhere to the counselled diet changes. Single sitting pulpectomies were performed w.r.t 51, 52, 53, 61, 62 & 63 and obturation was done with calcium hydroxide and iodoform paste followed by post-endodontic restorations. Fibre post was used w.r.t 52. Preformed zirconia crowns were cemented w.r.t 51, 52, 53, 61, 62 & 63 in the 3rd visit. In the 4th visit pulpectomies w.r.t 64, 74 & 75 were done followed by cementation of preformed zirconia crowns. In the 5th visit, single sitting pulpectomies were performed w.r.t 54 & 84 followed by cementation of a preformed zirconia crown and a stainless-steel crown respectively. On the sixth visit, extraction w.r.t 85 was done and preformed distal shoe space maintainer was placed w.r.t 84.

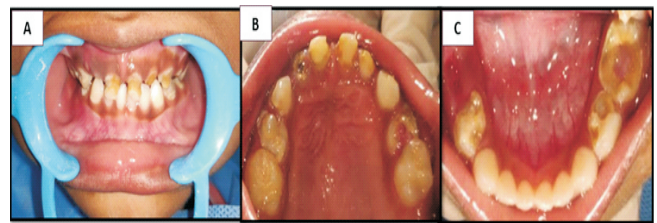


Figure 1: A. Pre-operative Frontal view B. Maxillary occlusal view C. Mandibular occlusal view



Figure 2: Pre-operative OPG

Full mouth rehabilitation was carried out in multiple sittings and treatment was completed. (Figures 3 & 4). The patient was instructed to keep regular follow up every 3 months for 1 year to check the status of exfoliation of the primary teeth, the eruption of permanent teeth, compliance with control measures for caries and the status of the periodontal health. At the follow-up examination after 1 month, all the restorations, crowns and space maintainer were assessed and were found to be intact. The patient had no new carious lesions, pain, swelling, or discomfort of any kind and had good oral hygiene. The patient was motivated to maintain his oral hygiene and was instructed to adhere to the diet chart given

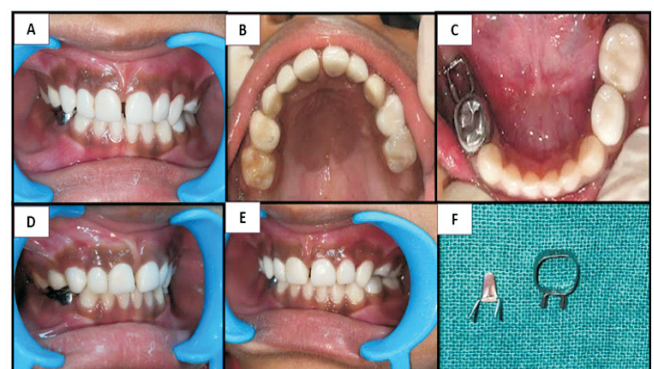


Figure 3: A. Post-operative Frontal view B. Maxillary occlusal view C. Mandibular occlusal view D. Right lateral view E. Left lateral view F. Preformed distal shoe space maintainer

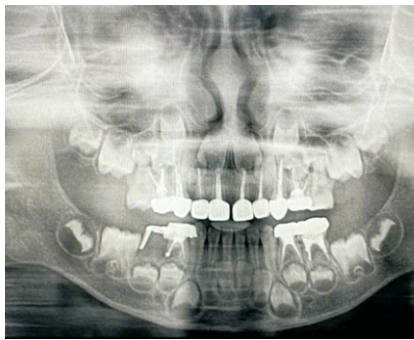


Figure 4: Post-operative OPG

Discussion:

The management of patients with ECC at this tender age is a delicate task as they are anxious about dental treatment. Anxiety has a great impact on a child's behavior, and is a major factor in rendering a successful dental treatment. The consequences of ECC often include a threat to new caries lesions in both the primary and permanent dentitions, hospitalizations and emergency room visits, high treatment expenditure, loss of school days, diminished ability to learn, and poor oral health-related quality of life.[4, 5]

ECC has a characteristic and pathognomonic decay pattern. ECC initiates on the cervical third of the labial surfaces of the maxillary anterior teeth and simultaneously affects the occlusal surface of the mandibular and maxillary first molars, mandibular and maxillary canines and second molars. The four maxillary incisors are most often affected while the lower primary incisors are least affected and the primary canines can be occasionally affected.[2]

In the present case all the teeth except for the lower mandibular anterior were affected. Pulpotomies were performed in all teeth requiring endodontic intervention which then were rehabilitated using preformed zirconia crowns because it not only restores strength, and function but also renders maximum esthetics when compared to all other pediatric crowns available.

The development of fiber-reinforced composite technology has brought a new material into the realm of metal-free adhesive esthetic dentistry.[6] Different fiber types are available like carbon fibers, glass fibers, Kevlar fibers, Vectran fibers, and polyethylene fibers. Polyethylene fibers are preferred as they improve the impact strength, flexural strength, modulus of elasticity and are almost invisible in the resinous matrix, in contrast to other fibers. Polyethylene fiber

post was used to restore the grossly decayed tooth i.e.,52 followed by rehabilitation with a preformed zirconia crown. A preformed distal shoe space maintainer was used as it can be given chair side and minimizes the number of visits.[7, 8] Class 1 cavities were restored using composite filling material.

Follow-up visits are very important as they significantly contribute to the success of treatment. Recall appointments should be scheduled based on the clinician's assessment of the patient's future caries risk. Therefore, based on these criteria, recall appointments were planned for our patient. A healthy dentition and a happy smile bring happiness and satisfaction to the parents, child and also to the dental team who provided the information, instruction and reinforcement.

Conclusion:

Primary dentition plays a very important role in the child's growth and development. Maintaining pediatric dental integrity is important to ensure mastication, phonation, aesthetics, correct tooth spacing and prevention of psychological effects. The treatment done in the present case report is effective yet simple. To ensure the complete success of the treatment, identifying the risk factors associated with ECC becomes an utmost necessity and appropriate treatment should be initiated to prevent the development of abnormalities in the permanent dentition. The patient should be guided and encouraged for regular dental check-ups, maintain his oral health and have a healthy diet.

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