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

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Abstract: ***ECC can be a particularly aggressive type of caries that starts shortly after dental eruption, grows on smooth surfaces, advances quickly, and negatively affects the dentition for a long time. Full - mouth rehabilitation for Early Childhood Caries (ECC) involves addressing all affected teeth in a child's mouth, to restore function, aesthetics, and oral health. This is a challenge due to the severity of the decay and the difficulty in managing young children. The purpose 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 and lower back teeth in the last 4 - 5 months. Radiographic examination reveals pulpal involvement wrt 51, 61, 52, 62, 64, 74, 75, 84, 85 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 placement of reinforced fiber post and crown. Full mouth rehabilitation can significantly improve the oral health related quality of life of children with ECC.***

Keywords: Early childhood caries, Reinforced fiber post, Stainless steel crowns

1. Introduction

Dental caries, is a major oral health issue in children, particularly affecting their primary teeth. Early childhood caries (ECC), also known as baby bottle tooth decay or infant caries, is a severe form of dental decay that affects the primary teeth of young children, typically those under the age of 6. It affects a substantial portion of school - age children, ranging from 60% to 90%. Overall prevalence of early childhood caries (ECC) in India has been reported to be 49.6%. It has been observed that 44% of 8 to 48 month olds have ECC, and 40.6% of 1to 3 - year - old children living in rural areas of south India have been found to have the disease, with 50.3% of them having surfaces that are non - cavitated and 49.7% having cavitated surfaces [1]. The etiology of ECC is multifactorial. The primary cause of ECC is extended bottle feeding, which includes sweetened milk, fruit juice, and pacifiers dipped in honey and consumption of cariogenic foods and inappropriate feeding techniques. Other contributing factors include dental neglect. ECC develops soon after tooth eruption, grows rapidly on smooth surfaces, and causes damage to the primary dentition [1]. Early childhood caries if left untreated will eventually result in pain, inflammation, cellulitis, premature extraction, loss of space, loss of function, esthectics, mispronunciation of labiodentals sounds, and development of abnormal oral habits and consequent complications in the development of permanent dentition [3]. Thus, preserving deciduous teeth until its natural period of exfoliation is crucial for maintaining the arch form and integrity.

This article reports a case of full mouth rehabilitation of primary teeth of a 4 - year - old patient with ECC treated at the Department of Pediatric and preventive Dentistry, KVG Dental college Sullia.

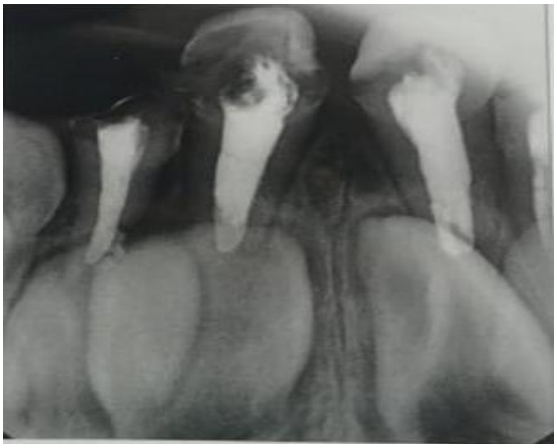
2. Case Report

A 4 - year - old child, accompanied by his mother, presented to the Department of Pediatric and Preventive Dentistry with a primary complaint of decayed upper front teeth, which had been progressively worsening over the past 4–5 months. At the time of examination, the condition was asymptomatic [Figure 1, 2].

The mother reported that the child had been breastfed for the first year of life, after which bottle - feeding continued for three years, typically two to three times daily, often with sweetened milk.

The child's medical history and general health were unremarkable. Dietary analysis revealed a marginally adequate food score. Clinical and radiographic examination revealed multiple carious lesions with pulpal involvement in teeth 51, 52, 61, 62, 64, 74, 75, 84, and 85. Carious lesions without pulpal involvement were also observed in 54 and 55. Given the extent of decay and loss of tooth structure, reinforced fiber posts were planned for 52 and 62.

Based on clinical and radiographic findings, a diagnosis of Early Childhood Caries (ECC) Type III, Stage IV was made. Following informed consent from the parents, dietary counseling, oral prophylaxis, and comprehensive treatment were initiated. Pulpectomy procedures were carried out on teeth 51, 52, 61, 62, 64, 74, 75, 84, and 85 using Metapex



[Figure 3,] In 52 and 62 approximately 4 mm of Metapex was removed from the coronal portion of the canals, and 1 mm of glass ionomer cement (GIC) was placed. Fiber posts of appropriate size were trial - fitted and trimmed to extend 3 mm into the canal and 2 mm coronally. The canal walls were etched with 37% phosphoric acid for 15 seconds, rinsed, and dried. Two layers of dentin adhesive were applied with a microbrush. Flowable composite was then injected 2–3 mm below the cementoenamel junction, and the fiber post was inserted and light - cured [5]. The coronal portion of the post was built up using resin composite [Figure 4].

Following pulpectomy stainless steel crowns were placed on teeth 64, 74, 75, 84, and 85. [Figure 5, 6, 7] Composite restorations were performed on teeth 54 and 55 [Figure, 7]. Occlusion was checked, and any interferences were adjusted. Final finishing and polishing of all restorations were completed, resulting in an improved aesthetic outcome and a renewed smile for the child [Figure 8, 9].

Post - treatment, an intraoral periapical radiograph was taken to evaluate the restorations [Figure 10, 11]. Parents were advised on dietary modifications, maintenance of oral hygiene and care of restorations. Follow - up reviews were conducted at 3, 6, 12 and 18 months to monitor the child's oral health and ensure the preservation of the primary dentition.

3. Discussion

Early childhood caries (ECC) refers to a condition where dental caries develop rapidly in the primary teeth of young children, often burrowing in nature, progress quickly into the tooth structure, eventually affecting the dental pulp.
In the present case study, the child was found to have a highly cariogenic diet. Instead of recommending a complete reduction in carbohydrate consumption—which is neither practical nor ideal—the emphasis was placed on reducing the frequency of carbohydrate intake. While it's unrealistic to eliminate sugar entirely from a child's diet, we advised that sugary snacks be limited to mealtimes and be supervised by parents [2]. Additionally, the inclusion of cheese in the diet was suggested, as it helps bathe the teeth in calcium, phosphate, and bicarbonates. These components raise the plaque pH and promote remineralization of tooth enamel [2.]

Restoring the aesthetics of primary teeth presents a particular challenge in pediatric dentistry, especially when significant coronal tooth structure has been lost. In such cases, intracanal posts can be placed following endodontic treatment to provide retention, support crown reconstruction, and resist functional chewing forces. Various types of root posts are available in pediatric dentistry, including directly built - up resin composite posts, short resin posts, alpha - or omega - shaped orthodontic wires, prefabricated stainless steel posts, nickel - chromium cast posts with macro retentive features, natural tooth fragments from tooth banks, and fiber - reinforced posts [3].
The properties of fiber - reinforced posts are relying on the nature of the matrix, fibers, interface strength, and geometry of reinforcement. This material possesses an advantage over the older fibers like greater flexural strength, greater ease of handling, can be used in high stress - bearing areas and can be bonded to any type of composites. Scanning Electron Microscopic (SEM) evaluation has shown clearly the formation of a hybrid layer, resin tags, and an adhesive lateral branch. Successful bonding minimizes the wedging effect of the post within the root canal, requires less dentin removal to accommodate a shorter and thinner post, and leads to lower susceptibility to tooth fracture. These posts are placed in cervical one third of the canals, to avoid interference with the process of permanent tooth eruption [4]. When compared to other fibres, they are almost invisible in resinous matrix so they are the most appropriate and the best esthetic strengtheners of composite materials. Although metal posts are suitable for primary teeth in terms of function, their metallic appearance makes them less aesthetically pleasing. Furthermore, they may interfere with the natural exfoliation process.

Post Placement in Anterior Tooth

Anterior Rehabilitation

Fiber - reinforced posts offer better aesthetics, but they are susceptible to retention loss due to polymerization shrinkage. Omega - shaped orthodontic wires can also be used as posts; however, they lack optimal adaptability to the canal's anatomy since they are not a precise fit.

For severely decayed primary teeth, particularly molars, **stainless steel crowns** are commonly used in pediatric

dentistry. These crowns protect the tooth by fully covering it, thereby preventing bacterial invasion and acid attacks [5]. They offer a long - lasting and practical solution that maintains function for chewing and speaking while preserving the space necessary for the proper eruption of permanent teeth.

Full mouth rehabilitation (FMR) plays a critical role in managing early childhood caries (ECC), offering both immediate and long - term benefits for affected children. FMR allows for the complete treatment of all decayed teeth in a single or limited number of sessions, often under general anesthesia for uncooperative or very young children. When performed without general anesthesia and with proper acclimatization, FMR can improve a child's behavior and cooperation during future dental visits. Restoration of esthetics and function through FMR positively affects self - esteem, speech development, and social interactions. Both parents and children report high satisfaction due to restored function, improved esthetics, and relief from pain and discomfort. Untreated ECC can impair nutrition and growth, sometimes leading to failure to thrive, but FMR has been shown to result in "catch - up" growth, normalizing age - adjusted weight and growth velocity in affected children [6].

4. Conclusion

Early Childhood Caries (ECC) is a serious oral health issue affecting young children, but it's largely preventable. ECC is a chronic and infectious disease that can negatively impact a child's overall health, including their development, and quality of life. Thus by implementing preventive measures, early intervention, and promoting good oral hygiene practices, we can significantly reduce the impact of ECC and ensure a healthy future for our children's smiles.

References

[1] Zanwar K S, Khubchandani M, Chandak M, et al. (August 16, 2024) From Decay to Delight: A Case Report on Esthetic Rehabilitation in Early Childhood Caries. Cureus 16 (8): e67005. DOI 10.7759/cureus.67005
[2] Dr. Savitha Sathyaprasad, Dr. Krishnamoorthy S. H., Dr. Vinisha Vinod and Dr. Anjali N, 2021. "Multiple custom - made half omega post foranterior esthetic rehabilitation of early childhood caries - a case report", International Journal of Current Research, 13, (02), 16338 - 16341.
[3] Goldenfum GM, de Almeida Rodrigues J, et al. Esthetic Rehabilitation in Early Childhood Caries: A Case Report. Int J Clin Pediatr Dent 2019; 12 (2): 157–159.
[4] K Sharma, A Kohli, K Gupta, M Pandey, V Kohli. Decayed Primary Anterior Tooth Restored Postendodontically With Glass Fibre Reinforced Composite Post and Core: A Case Report Rama Univ. J. Dent. Sci.2017 December; 4 (4): 1 - 5.
[5] Verma L, Passi S. Glass Fibre-Reinforced Composite Post and Core Used in Decayed Primary Anterior Teeth: A Case Report. Case reports in dentistry.2011; 2011 (1): 864254.5
[6] Doneria D, Thakur S, Singhal P, Chauhan D. Complete mouth rehabilitation of children with early childhood caries: A case report of three cases. Int J Pedod Rehabil 2017; XX: XX - XX.