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Oral Rehabilitation of Early Childhood Caries: A Case Report

Shoimah Alfa Makmur [a, 1*], **Putri Kusuma Wardhani** [a, 2] , **Finsa Tisna Sari** [b,3]

[a]Fakultas Kedokteran Gigi, Universitas Gadjah Mada, Yogyakarta

[b] Faculty of Dentistry, Niigata University, Japan 951-8514

[1] shoimah.alfa.m@mail.ugm.ac.id*, [2] putrikusuma_64@ugm.ac.id, [3] n21d358c@mail.cc.niigata-u.ac.jp

*Correspondence Author : shoimah.alfa.m@mail.ugm.ac.id

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ABSTRAK

Background: Early Childhood Caries (ECC) can begin early in life, progress rapidly in those who are at high risk, and often go untreated. It is a disease that affects children below age 6 years old. **Objectives**: To prevent caries that will continue and get the esthetic rehabilitation. **Case**: A 3-year-old girl came with her parents to RSGM UGM with chief complaints of cavities in upper anterior and posterior teeth. Based on anamnesis and clinical examination, it can be concluded that the patient had ECC. **Discussions**: Early childhood caries is an infectious disease of the primary teeth in children which if not intervened at an early stage can lead to severe destruction of the teeth in the primary dentition. The treatment plan included dental hygiene education, endodontic and restoration, topical application of fluoride and post-treatment control. A psychological approach is needed so that patients can be cooperative and communicative. **Conclusion**: It is important that dentist are capable of early diagnosing and treating ECC. The treatment is not only provide dental benefits but also plays a role in enhancing the patient's esthetic appearance and psycho-social wellbeing.

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Introduction

Childhood is an important phase in the development and growth of teeth. Early Childhood Caries (ECC) is a primary public health issue and has become a common chronic disease. ECC can be defined as the occurrence of one or more decayed lesions (noncavitated or cavitated), loss of teeth (due to caries), or a restored teeth surface in any primary teeth in a child 71 months of age or younger.[1] ECC typically initiates with the appearance of white lesions on the incisors in the maxilla along the margin of the gingiva, both at the buccal or lingual surface, whereas the incisors in the mandible usually remain unaffected.[2] In older preschooler, the occlusal surface of the second primary molar and the distal surface of the primary first molar are predominantly affected. If the decay persists, it would progress, eventually causing damage to the dental crown.[3]

ECC emerges following the eruption of primary teeth, advancing swiftly on the teeth surface, eventually leading to symptoms such as toothache, acute and chronic abscess, fever, lip swelling, and reduces appetite. The occurrence of dental and oral health issues in children is affected by environmental and social factors. An environmental factor includes the behavior or attitude of neglecting dental and oral hygiene.[4 5] Parents frequently encourage improper eating habis, such as providing milk or sugary drinks to children while they are in bed, allowing the liquid to accumulate on the surface of the upper teeth as they sleep (anterior teeth in the mandible are usually protected by the tongue and thus are rarely affected). Cariogenic microorganism can flourish in the oral cavity due to drinks that contain carbohydrate. During sleep, saliva production decreases, resulting in a slower removal of leftover milk from oral cavity.[6 7]

Untreated ECC can lead to challenges such as discomfort while chewing due to painful teeth surfaces or premature loss of primary teeth, impacting dental growth and development. Preventive measures from ECC involve educating on oral hygiene, maintaining a proper diet, and utilizing fluoride. Treatment options include teeth restoration, root canal therapy, or extraction. Restoring severe damaged teeth poses a significant challenge for pediatric dentists.[8 9] According to Ng and Edelstein (2015), effective communication between Dentist and patient, strategy for patient self-care, minimum invasive procedure, and risk based preventive program has given better results in managing ECC. The main purpose of patient care with such ECC diagnosis is to restore the missing teeth structure in order to maintain its function and prevent change in chewing, phonetic, and psychological issues that would affect the child's self-esteem.[11]

This case report presents the management of total care of a three year old patient who has caries which affected almost all of her upper anterior primary teeth that shows a pattern of early chidhood caries. The purpose of the total care management for this patient is to prevent further development of caries and to give the best care results.

Case Report

A 3-year and 7-month-old girl accompanied by her mother visited Dental and Oral Hospital, UGM Prof. Soedomo with concern about her anterior teeth and requested for a

treatment. This marked her first dental visit and she displayed fear of the clinic environment. The purpose of her visit was to address the issue with her decayed teeth. The child has no history of systemic disease, allergies or current medication usage, and never had hospitalized. The child's physical and psychological development appeared normal for her age. However, she exhibited a negative response to treatment. Behavioral management techniques employed included maintaining positive behavior through Tell-Show-Do method, establishing a treatment schedule, and using language appropriate to the child's understanding.

During clinical examination caries dentin was found in teeth #52, #54, #62, #63, #64, #71, #74, #75, #81, and #85; pulp necrosis of teeth #51 and #61. A healthy gingiva is reddish in color and has a stippling effect. This is normal due to the increase in vascularization and epithelium thickness in the child's gingiva. According to the extraoral examination, her face is symmetrical, there is no swelling, there is no pathology on the lips and face, neck muscles and head, while the lymph nodes and temporomandibular joint syndrome (TMJ) are within normal range. Radiographic imaging couldn't proceed due to the patient's fear and distress, resulting in tears when attempting to take an X-ray. Based on the anamnesis and examination, the diagnosis showed that the patient suffered from Early Childhood Caries.

During the initial appointment, the Tell-Show-Do technique was employed with the patient. Additionally, both the parents and the patient received instruction on proper teeth brushing techniques. They collectively acknowledged the necessity for comprehensive care management due to extensive decayed dental, agreeing then treatment would proceed gradually. During the second visit and afterwards the patient was already brave enough to open her mouth and the treatment can be started (Table. 1).

Tabel 1. Treatments Visit

Visit	Treatments
1st visit	The caries was removed from tooth #54 using an excavator, followed by filling it with Glass Ionomer Cement (GIC). Subsequently, the decay in tooth #52 was restored using the sandwich technique. GIC is applied as a liner, after which a composite resin is placed along with a strip crown to provide an aesthetic restoration.
2nd visit	A one-visit pulpectomy treatment was performed on teeth #51 and #61 which had pulp necrosis. Root canal irrigation was done using saline followed by drying with a paper point. The root canal was filled with calcium hydroxide and iodoform (Metapex®, META Biomed Co. Ltd., Korea), then restored using strip crown, same as tooth #52.
3rd visit	Caries removal was performed on teeth 62, 63, and 64. Tooth 62 was prepared and restored with a strip crown using lining and resin composite. The cleaned cavities of teeth 63 and 64 were then restored using GIC.
4th visit	Teeth #74 and #75 were restored using Glass Ionomer Cement (GIC).
5th visit	Glass Ionomer Cement (GIC) was utilized to restore teeth #71 #81 and #85. Following the comprehensive case assessment, topical fluoride application was administered to prevent future tooth decay.

Fig. 1. Pre-Operative View of Primary Anterior Teeth

Fig. 1. Post-Operative View of Primary Anterior Teeth

Discussions

Early Childhood Caries (ECC) is characterized by decayed lesions, tooth loss, or restored surfaces in primary teeth of children aged 71 months or younger.[1] ECC typically begins with white spot lesions on the upper incisors near the gum line, progressing to crown damage if left untreated.[3] This condition results from an imbalance between risk and protective factors, leading to various issues such as toothaches, early tooth loss, malnutrition, growth delays, chewing difficulties, speech problems, and overall health and psychological concerns. ECC may also impact self-esteem and cause permanent tooth damage.[12]

Studies, including one by Andreeva (2018), indicate that caries prevalence is highest in children under five years old, with social and biological factors contributing significantly to ECC development. Newly erupted teeth and those with enamel hypoplasia are particularly vulnerable to caries.[13] Pediatric dental care aims to minimize visits and keep treatments simple to alleviate discomfort. Treatment frequency depends on patient cooperation and operator skill, with priority given to addressing patient complaints. Children with ECC typically undergo minimal cavity preparation and receive preventive fillings for primary teeth. Secondary prophylaxis and oral hygiene implementation follow primary tooth eruption.[15]

Glass ionomer cement (GIC) is often used for its fluoride-releasing properties, moisture tolerance, easy application, and ability to halt secondary caries. In cases of hypersalivation or patient non-cooperation, GIC is preferred due to its ease of use and effectiveness in preventing caries.[16] Fluoride plays a crucial role in caries prevention and management. Topical fluorides inhibit demineralization, enhance remineralization, and affect bacterial metabolism. High-concentration topical fluoride applications create a temporary calcium fluoride coating on enamel, gradually releasing fluoride ions to strengthen teeth. Systemic effects occur if swallowed.[17]

With proper treatment and collaboration between dentists, patients, and parents, ECC can be prevented and managed effectively in pediatric dentistry. Success depends on long-term dental care and patient commitment. The patient had already achieved caries control and demonstrated excellent hygiene practices, showing strong adherence to the recommended treatment.

Conclusion

Given the information provided, it is crucial for dentists to possess the skills necessary for early detection and treatment of ECC. The treatment should not only aim to restore oral health but also enhance the patient's overall quality of life, including their psychosocial well-being. In the case described, a satisfactory outcome was attained as both the functionality and aesthetics of the teeth were restored, leading to an improvement in the child's self-esteem.

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