

Case Report

Comprehensive Management of Early Childhood Caries

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ABSTRACT

Background: Early childhood caries (ECC) is a dental infection disease that common in children. ECC appears as soon as the baby's teeth erupt, develop rapidly and cause prolonged health problems.

Objective: This case report aim to present a comprehensive management of ECC.

Overview: Dental care is very important to prevent tooth decay. Local control aims to reduce bacterial activity to stop caries and prevent rapid propagation to the pulp with pulpectomy, stainless steel crown restorations, fissure sealant, extraction and topical flour.

Conclusion: ECC requires appropriate and immediate treatment to maintain the presence of teeth in the oral cavity.

INTRODUCTION

Early childhood caries (ECC) is a dental infection that is common in children. American Dental Association defines ECC as characterized by one or more tooth decay, either cavitated or non cavitated lesions, tooth loss due to caries, or surface fillings of primary teeth at preschool age between birth ages to 71 months.¹

Wyne groups ECC into three types²:

- a. Type I (mild to moderate): carious lesions are molar and / or incisive
- b. Type II (moderate to severe): labial and palatal carious lesions of the maxillary incisors and first molars
- c. Type III (severe): almost all teeth are affected by caries lesions, including mandibular incisive

ECC appears as soon as the baby's teeth erupt and develop rapidly and cause prolonged health problems in

children. Factors that cause the occurrence of ECC are cariogenic microorganisms, cariogenic substrates and hosts. These factors interact over a period of time and cause an imbalance in demineralization and remineralization between the tooth surface and the plaque layer. The cariogenic microorganisms are the main causes of ECC namely *Streptococcus mutans* and *Streptococcus sobrinus*.¹

Risk factors related to the occurrence of ECC are social status, behaviour, immigrant families, lack of knowledge, low health and parental education.²

CLINICAL REPORT

A 7 year old boy came with his parents to the Department of Pediatric Dentistry at Padjadjaran University Dental and Oral Hospital with complaints of

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pain in the mandibular molars. Clinical examination showed there were deep caries in teeth 74, 75, 84 and secondary caries in 85 teeth, deep pits and fissures in teeth 16, 26, 36 and 46, and tooth persistence 72 (Figure 1). Body posture shows no abnormalities (Figure 2).

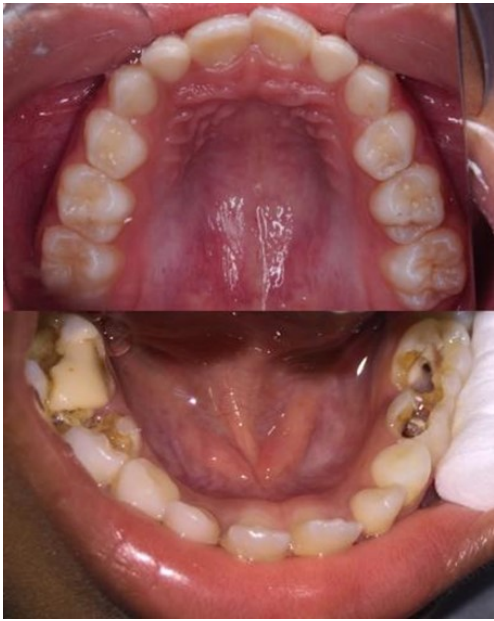


Fig 1: Intra oral pre treatment



Fig 2: Body Posture

Clinical Procedure

1. 1st visit

- Determine the working length from the average root length table on teeth 74, 75, 84, 85
- Remove all old restoration in 85 and caries by preparing access to the cavity on teeth 74, 75, 84, 85
- Extirpation of tooth pulp tissue 74, 75, 84, 85 with broach barbed and 0.9% saline irrigation
- Root canal preparation 74, 75, 84, 85 using K-File No. 10-30. Irrigation with 0.9% saline. Dry with paper points and sterilize with Cresotin, cover with temporary fillings. Control 3 days later.

2. 2nd visit

- Open temporary fillings, remove cotton pellets containing drugs, clean the root canal and irrigate with 0.9% saline on teeth 74, 75, 84, 85.
- Dry the root canal with a paper point and sterilize again with Cresotin, cover with temporary fillings. Control 3 days later.

3. 3rd visit

Root canal filling of teeth 74, 75, 84, 85 with the material of Zinc Oxide Eugenol, then place GIC and control 1 week later

4. 4th visit

- There were no patient complaints, percussion tests, pressures, and mobility are negative. There is no inflammation in tissue around teeth 74, 75, 84, 85.
- Dental restoration 74, 75, 84, 85 with a SSC (Figure 3).
- Build up 74, 75, 84, 85 using cement or GIC
- Reduce the occlusal surface to about 1.5mm

- e. Using a tapered diamond bur cut the interproximal part. Reduction must allow the probe to pass through contact area
- f. Small buccolingual reduction may needed. However, this reduction must be kept to a minimum because this surface is important for retention
- g. The size of the appropriate SSC is chosen by measuring the width of the mesiodistal. It is important that the crown must be no more than 1 mm subgingival. If there is excessive pale tissue, the length of the crown should be reduced using scissors or abrasive stones and smoothed with white stone.
- i. Crown Cementing with GIC



Fig 3: Intra oral post treatment

5. 5th visit

- a. Control all SSC restorations. On subjective examination there were no patient complaints, clinical percussion tests, compressive tests, mobility was negative and good gingival adaptation
- b. Fissure sealants in teeth 16, 26, 36, 46
- c. Teeth are cleaned using a dental prophylaxis
- d. Teeth are isolated on the quadrant which will be carried out with fissure sealants

- e. Application of sealants using Fuji 7
- f. Check occlusion with articulating paper

6. 6th visit

- a. Tooth extraction 72 using topical anesthesia for 3 minutes followed by 1cc infiltration on mucobuccal fold of 72
- b. Patient were instructed to bite the tampon for 15 minutes

c. 7th visit

- a. Control all restoration that has been done and post extraction
- b. Application of Topical Fluor by using 0.5ml varnish. All the teeth being prophylactically using pumis followed by applying fluor varnish using a brush on the entire surface of the tooth and left to dry for 5 minutes
- c. Patients were instructed not to eat and drink for 30 minutes
- d. Patients were instructed to control periodically every 6 months

DISCUSSION

Childhood and early adolescence are crucial periods in the development of healthy dentition. Early childhood caries (ECC) is a major public health problem, being the most common chronic infectious childhood disease, which is difficult to control. While not life-threatening, its impact on individuals and communities is considerable, resulting in pain, impairment of function, deleterious influence on the child's growth rate, body weight, and ability to thrive, thus reducing quality of life.⁹

ECC treatment must be adjusted to conditions and complaints of patients. The main treatment is relieving

pain. It can be treated locally on the teeth or oral. Clinical caries control can be done by monitoring eating habits by diet analysis.¹ ECC is a preventable disease. The physical, psychological, and economic consequences of ECC can be avoided through the education of prospective and new parents on good oral hygiene and dietary practices.¹⁰

Pulpectomy is indicated in primary teeth with a diagnosis of irreversible pulpitis or pulp necrosis, with the crown of the tooth still can be restored. Resorption of roots is less than the apical third of radiographic images of primary teeth with widespread pulp inflammation but roots and alveolar bone are free of pathological resorption so that periodontal tissue is still healthy.³ In this case pulpectomy treatment in teeth 74, 75, 84, 85 was chosen according to the indications. Pulpectomy expected to prevent further infections and teeth can be maintained until the time of change with permanent teeth. The advantage of pulpectomy is to maintain the function of mastication, maintain space for permanent teeth, prevent problems in speech, prevent bad habits of the tongue, prevent the psychological effects of tooth loss.³

Prefabricated SSC can be adapted to each primary tooth and cemented to provide definitive restoration. SSC is very durable, relatively inexpensive, and offers full coronal closing benefits. SSC is often used to restore primary teeth in children while other restorations often fail.

Over retained tooth is a case where the deciduous teeth persist in the dental arch beyond the normal time causing eruption disorders of the replacement permanent teeth. Normally, the roots of the decidui teeth will be completely absorbed by osteoclasts so there will be mobility and eventually loss just before the replacement permanent teeth erupt. Some of the causative factors for

over retained tooth are ankylosis, slow root resorption of primary teeth, hypothyroidism and malposition of permanent tooth seeds. Etiology in this case is the malposition of primary teeth.⁶ Over retained teeth and teeth that cannot be treated anymore must be removed immediately so as not to disturb the teeth while growing and not becoming bacterial retention or as focal infections.

Main purpose of giving sealants is to penetrate the material into the pit and fissure to close the area from bacteria and debris. Pits and fissures vary in shape and depth. U-shape fissures tend to be shallow, wide so they are easy to clean and more caries resistant. While the shape of the pit and fissure in the form of V or I tends to be deep, narrow and winding so that it is more susceptible to caries. This formation results plaques, microorganisms and debris.⁴ A study from AAPD, the 2002 Consensus Conference on Child Restorative Dentistry recommended the use of sealants in permanent molars in children and adolescents.⁵

Topical fluor was given regularly to prevent further tooth decay. Fluor works by inhibiting the metabolism of plaque bacteria which can ferment carbohydrates through changes in the hydroxyl apatite on enamel to become more stable and more resistant to acid dissolution. The reaction of $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2 + \text{F} \rightarrow \text{Ca}_{10}(\text{PO}_4)_6(\text{OHF})$ produces enamel which is more acid resistant so that it can inhibit the process of demineralization and increase remineralization.⁷

The use of fluor as a topical application has been shown to inhibit acid formation and the growth of microorganisms resulting in a significant increase in maintaining the tooth surface from the caries process.⁸

SUMMARY

Early childhood caries forms of caries in the primary teeth. Caries treatment is important for maintaining the condition of the teeth in the period of the primary teeth so that they can be dated on time and replaced with permanent teeth. Total care in ECC cases requires good collaboration between patients - dentists - parents of children, so that the expected results can be achieved.

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