

Restoring the Candy Crushers – A Case Report on ECC

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Abstract

Early childhood caries is an irreversible and a polymicrobial disease commonly seen in very young children. Deciduous tooth are the one which is commonly affected in this. The various factors which cause early childhood caries includes diet (carbohydrate), microbes chiefly streptococcus mutans and lactobacillus, host, saliva and time. The clinical manifestations include decayed tooth in mostly posterior and anterior tooth with pain, sinus opening with pus discharges. These stages if left untreated would lead to poor nutrition intake and even cause various psychological effects. This paper presents 2 case reports, in which the patients were diagnosed with ECC and here we have discussed the treatment plan from its management of the existing lesions to prevention of such lesions in future

Keywords: ECC, Early Childhood Caries, Dental Caries in Primary dentition, Crown and loop space maintainer, Fixed Functional Space maintainer

Introduction

Early Childhood caries is one of the major public health problem in both developing and developed countries. It is a rapidly occurring and burrowing type of caries most commonly seen in children younger than 6 years of age. The main etiological factor for the occurrence of dental caries is its multifactorial nature and its association with low socioeconomic status. According to MS Muthu et al in 2018 the highest prevalence of ECC in India was in Andhra Pradesh (63 %), whereas in the lowest prevalence was seen in Sikkim (41.92 %). It affects both the oral and general health status in children. ECC commonly occurs on tooth surfaces which are immune to decay i.e., labial surfaces of maxillary anteriors, lingual and buccal surfaces of maxillary and mandibular posteriors. It is commonly associated with pain, orthodontic problems and enamel defects, which ultimately leads to problems with eating, speech and even may have psychological effects. It had shown to have a greater impact on the long term quality of the child and family. Primary dentition plays an important role in mastication, phonetics and esthetics. Dental caries in primary and permanent dentition is not a self-limiting like other infectious diseases, it requires professional treatment plan and management to remove the infectious part and to restore the tooth function

CASE DESCRIPTION

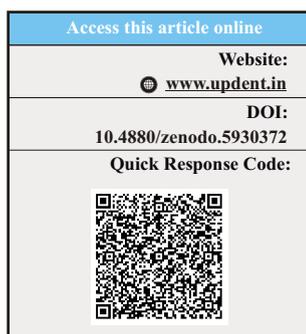
Case Report 1

A 4 year old male child reported to the OPD of the department of Pediatric and Preventive dentistry with the chief complaint of pain in upper front region of the jaw for past 2 days. The history of pain was sudden in onset, intermittent in nature, dull aching, nocturnal pain, which got aggravated on eating and relieved after taking over the counter medication. The child had a satisfactory general health status and past medical history.

On enquiring about the past dental history, it was known that the child had undergone restoration in maxillary primary incisors, a year ago. The parents were enquired about the personal history of the child which included diet chart and it was known that the child had a sweet score of 55 which was way beyond the “watch out zone”.

During the initial visit the child exhibited the child was unco-operative and showed a score of 2 ((Frankel's behavior rating scale-1962).

On Clinical examination sinus opening with no pus discharge was seen in relation to 62, and multiple caries were noted as root stumps in relation to 52, 51, 61, 62, with pulp polyp in relation to 51, 61, multisurface caries in 54, smooth surface caries in 53, 63, Class I caries in 55, 65, 74, 75, 84, 85. (Figure 1, 2, 3)



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Figure 1: Frontal View: Root Stumps – 52, 51, 61, 62, With Sinus Opening - 62



Figure 2: Maxillary Arch With Multiple Caries – Class 1 -55, 65, Multisurface Caries- 54, 64, Smooth Surface Caries- 53, 63, Root Stumps: 52,51,61,62



Figure 3: Mandibular Arch Multiple Caries – Class 1- 75, 85, Class 2- 74, 84

In the radiographic examination none of the molars showed pulpal involvement, while the maxillary anteriors showed pulpal involvement with internal root resorption in 62 and widening of the pulp canal in relation to 51, 61. (Figure 4)

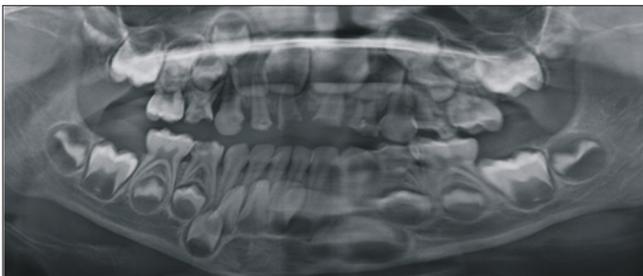


Figure 4: OPG – Multiple Caries With No Pulpal Involvement In 55, 54, 53, 63, 64, 65, 74, 75, 84, 85 & Pulpal Involvement in 51, 52, 61, 62, With Internal Root Resorption in 62 & Widening of The Pulp Canal in Relation to 51, 61.

Based on the clinical and radiographic finding, it was denoted that the child has Moderate ECC.

An extensive treatment planning was done, considering the age of the child. As the child was unco-operative we did the behavior modification of the child by tell show do technique, modelling and positive reinforcement. We started with minimal

invasive procedure to invasive procedures, which involved restorations of 55, 53, 63, 64, 65, 74, 75, 84, 85, stainless steel crown in 54, pulpectomy with post and core build up in 52, 51, and 61 followed by extraction and fixed functional space maintainer in 62. (Figure 5, 6, 7)



Figure 5: Frontal View: Esthetically Restored 52, 51, 61 and 62



Figure 6: Fixed Functional Space Maintainer – 62, in Maxillary Arch With SS Crown- 54, Restored 55, 65, 64, 53 & 63



Figure 7: Restored Carious Tooth in Mandibular Arch – 74, 75, 84, 85

As a preventive measure, topical fluoride application was done and oral hygiene instructions with diet counselling was given to both the child and the parents. The parents were informed the appliance will be removed once the incisors starts erupting. The patient was recalled after 1 week to check the integrity of the fixed functional space maintainer. Later follow-up were planned for 3 months, 6 months

During the entire procedure the child showed a behavior rating of Score 3 (Frankel's behavior rating scale- 1962).

Case Report 2

A 5 year old female child reported to the OPD of the department of pediatric and preventive dentistry with the chief complaint of pain in lower left back region of the jaw for past 7 days. The history of pain reported was sharp shooting pain sudden in onset and intermittent in nature got aggravated on eating food and relieved on taking over the counter medication. The child showed a satisfactory general health status and past

medical history.

As the child was little apprehensive we did a behavior modification by Tell show do, Modelling.

On clinical examination a sinus opening with no pus discharge was seen in relation to 51, 62, with multiple caries as Class 1 dental caries in 55, 65; Class 2 (Proximal caries) in 74, 75, 84, 85; Class 3 Dental Caries in 53, 63, 73, 83; Class 4 Dental Caries in 52, 51, 61, 62; Multi-surface caries – 54 and root stumps in 64 with grade 1 calculus. (Figure 8, 9, 10)



Figure 8: Frontal View: Root stumps – Grossly Carious 52, 51, 61, 62, With Sinus Opening – 51, 62



Figure 9: Maxillary Arch- Multiple Caries – Class 1 -55, 65, Multisurface Caries - 54, Smooth Surface Caries- 53, 63, Grossly Carious – 52, 51, 61, 62, Root Stumps – 64



Figure 10: Mandibular Arch Multiple Caries –Class 2- 74, 75, 84, 85, Smooth Surface Caries – 73, 83

An OPG was advised and it was seen that no pulpal involvement in 55, 54, 53, 63, 73, 74, 83, 84, 85 while pulpal involvement was seen in relation to 52, 51, 61, 62, 65, 75 and root stumps in 64. (Figure 11)

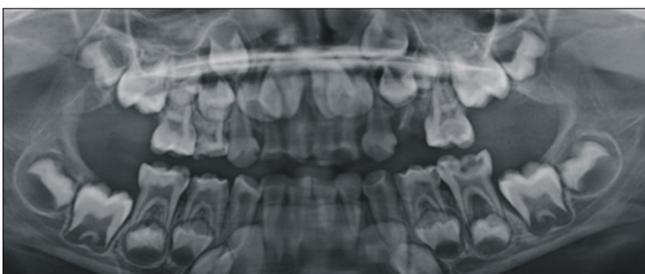


Figure 11: OPG – Multiple Caries With No Pulpal Involvement in 55, 54, 53, 63, 73, 74, 83, 84, 85 While Pulpal Involvement Was Seen in Relation to 52, 51, 61, 62, 65, 75 & Root Stumps in 64.

Based on the Clinical and Radiographic findings, a final diagnosis of Early Childhood Caries with Moderate and Severe form is noted.

The procedure followed as minimally invasive to invasive procedure i.e., restoration in 55, 54, 53, 63, 73, 74, 83, 84, 85 followed by pulpectomy and SS Crown in 52, 51, 61, 62, 65, 75, Extraction of 64 followed by Crown and lip space maintainer in 64 (Figure 12, 13, 14)



Figure 12: Frontal View: Esthetically Restored 53, 52, 51, 61, 62 and 63



Figure 13: Fixed Non -Functional Space Maintainer (Crown & Loop) in Maxillary Arch



Figure 14: Restored Carious Tooth- 74, 73, 83, 84, 85 & SS Crown- 75 in Mandibular Arch

As a preventive aspect Fluoride application with Oral hygiene measure were also advocated. The parents were informed that the space maintainer will be modified once the permanent successor erupts. As the child is under high caries risk group a follow up of 1 week, 1 month, 3 month and 6 months was planned.

The child showed a behavior rating score of 4 (Frankel's behavior rating scale- 1962) during the treatment procedures

Discussion

Early Childhood caries is a severe form of caries occurring in very young children due the imbalance between the risk and protective factors. It has a complex etiologies between the tooth, carbohydrate, microorganisms, time, Saliva and Social factors like socioeconomic status of the family. Thus ECC was found to be one of the most important factor which compromises the self-esteem in children's thus having a greater impact on the quality of life leading to nutritional and psychological problems. The main

culprit behind the occurrence of caries is the sugar component which causes severe damage to the tooth by the production of acids which demineralizes the tooth.

In both the cases reported it as seen that the children using of bottle containing milk with sugar, these are one of the risk factor which lead the child to develop ECC

Severely damaged anterior primary tooth ultimately results in Parafunctional habits which if left untreated leads to severe space loss and malocclusion. The main goal in prevention of early childhood mainly relies on the dentist, parents, child and the family of the child. The major two factors which determines the management of ECC in children is the dentist factor and the parents factor i.e. restoring a severely damaged tooth is a main challenging factor for the dentist while whether to give importance to the primary dentition is another challenging decision factor was seen among the parents

Clinical decision making regarding the management of children with ECC depends mainly on the age of the children, their risk levels and their oral health status. In the first case report, a fixed functional space maintainer was used in order to restore the esthetics and to prevent any psychological disturbance in the child. Use of fixed prosthesis are usually limited due to the arch modifications which take place when the child moves from primary dentition to mixed dentition. The child's age in this case report was 4 years i.e., primary dentition stage. During which the sagittal and transverse dimensions of the dental arches are unaltered. This provides a stability where a fixed prosthesis could be given. Patil et al 2011 showed that fixed space maintainer which was used to replace a deciduous maxillary anterior teeth provided good esthetic results with better patient co-operation

In the second case report crown and loop space maintainer was given to prevent the space lost due to 64. In a case reported by Kayalvizhi Gurusamy et al 2010, where a crown a loop space maintainer was found to be effective in the prevention of space loss which occurred proximal to a cavitated tooth

In both the cases the parents as well as the child were satisfied with the final results. After a week follow-up the child was well adapted with the space maintainer and there was no difficulties with speech or mastication seen.

In addition to treating a carious tooth by rehabilitation of the tooth structure lost, an indirect management of the parafunctional habits was also done in these cases thus ultimately preventing the malocclusion

Conclusion

ECC, a severe form of disease could be prevented by anticipatory guidance, in the prenatal, natal and post natal periods. Once the disease has occurred proper management should be done to prevent it deleterious effects on both oral and general health status of the child. ECC can be managed in two ways. First, through non-operative using SDF and Fluoride application, in uncooperative patient. Second, through operative procedures which is mainly affected by various factors like child behavior during the procedure and the oral health status of the

child. In this case report we had done the operative procedures like management of pulpally involved tooth. The complete success of the treatment relies on the hands of the dental practitioner and the child. Instilling a positive dental attitude in child through various behavior modifications is one of the main factor behind this success.

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