

# EARLY CHILDHOOD CARIES – AN INEVITABLE CHALLENGE

## ABSTRACT

Early Childhood Caries or ECC is a virulent form of caries affecting the primary teeth of infants and preschool children. The clinical features of ECC are unique. They range from white spots found on the facial surfaces of the maxillary incisors, mandibular molars and rarely the mandibular incisors. The other types are the mild to moderate and the moderate to severe. Though numerous preventive and treatment modalities are available, seldom are they harnessed. The preventive and management strategies include delaying and reducing the bacterial load, diet counseling, maintenance of good oral hygiene, use of sealants, interim therapeutic restorations (ITR), use of silver diamine fluoride and restorative treatment. A combined multifaceted approach with good team work would help in combating this multifactorial disease.

**Keywords :** Early Childhood caries, remineralization, primary tooth

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## INTRODUCTION

From time immemorial dental caries has been a matter of concern in the forefront of dentistry. A multifactorial disease caused by oral bacteria and mediated by dietary sugars and carbohydrates. It is a dynamic process of demineralization and remineralization that can progress or regress depending on the multitude of variables.<sup>1</sup>

In dentistry, most often one of the areas overlooked are the innocent, pearly white primary teeth. These little pearls can however turn into dark, black stumps causing pain and infection. It would alter the eating habits of the child leading to iron deficiency anemia. It could affect the emotional psyche of the child by interfering with the child's social smile and evoking a low self-esteem right from childhood that may grow into adulthood and cause social problems. Early Childhood Caries or ECC is a virulent form of caries affecting the primary teeth of infants and preschool children. Decay affects teeth sequentially as they erupt, beginning on the maxillary incisors followed by maxillary and mandibular molars. Progression is rapid resulting in pain and infection.

The American Academy of Pediatric Dentistry (AAPD) defines ECC as the presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger. In children younger than 3 years of age, any sign of smooth-surface caries is indicative of severe early childhood caries (S-ECC).<sup>2</sup>

## CLINICAL FEATURES

The clinical features pose a unique presentation.

Initially, they appear as white spots on the facial surfaces of the maxillary incisors, mandibular molars and rarely the mandibular incisors are affected.

The demineralized lesions become frank lesions within 6- 12 months causing cavities.

The mild to moderate type comprise of isolated lesions involving the molars along with or without the incisors usually in children aged 2- 5 years.

The moderate to severe type involve labiolingual carious lesions affecting maxillary incisors with or without molar caries and the mandibular incisors are unaffected.

The severe type affects all teeth including the lower incisors.<sup>3</sup>

The American Dental Association (ADA), American Academy of Pediatric Dentistry (AAPD) and American Academy of Pediatrics (AAP) recommend that all children have their first preventive dental visit and establishment of a dental home by 1 year of age. A dental home is defined as an ongoing, comprehensive relationship between the dentist and the patient (and parents), inclusive of all aspects of oral health delivered in a continuously accessible, coordinated and family centered way.<sup>4,5</sup>

This would enable children to have access to regular dental visits and implementation of customized, tailor made plans to prevent and manage the disease with referral to specialists when appropriate. The role of anticipatory guidance is immense.

## Prevention and management strategies

### Delaying and reducing the bacterial load

The vertical transmission of mutans streptococci from the mother or caregiver to the infant has been a cause of major concern. Strong correlation between salivary mutans streptococci counts in mothers and their children have been reported.<sup>6</sup>

Hence the sharing of utensils and spoons should be discouraged to prevent transmission of the pathogenic bacteria. Mothers and caregivers should be motivated to seek dental care and improve their oral health in the prenatal period ideally. The role of anticipatory guidance is immense. Xylitol in the form of gums have shown to reduce the carious bacteria abundantly.<sup>7</sup> Use of povidone - iodine and chlorhexidine mouthwashes can reduce the S.mutans and allied microbial load significantly.

### Diet Counseling

Parents should be recommended to reduce the frequency of exposure to sugars both in foods

and drinks to meal times. A balanced, healthy diet rich in vegetables and fruits should be encouraged. At will breast feeding at night should be avoided. The use of a bottle or sippy cup to bed with anything other than water should be avoided.<sup>8</sup>

### Maintenance of good oral hygiene

Good oral hygiene should be maintained with emphasis on proper tooth brushing, adequate use of fluorides both topically and professionally applied when and where appropriate. The use of remineralising agents has a huge role to play in the prevention and management strategies.

After every feed, the oral cavity should be rinsed with plain water. A gauze can be used to clean the mouth and the newly erupted teeth.<sup>6</sup>

A bimonthly topical application of a 10% povidone - iodine solution to the dentition of babies at high risk for ECC increased disease-free survival.<sup>9</sup>

The use of anticariogenic agents especially twice daily brushing with fluoridated toothpaste and frequent application of fluoride varnish, may reduce the development and progression of caries.<sup>10,11</sup>

Remineralising agents like CPP-ACP (casein phosphopeptide- amorphous calcium phosphate) laden varnishes and tooth pastes can be used.<sup>11</sup> The role of tooth mousse in remineralization is laudable.

### Sealants

Deep pits, fissures and grooves should give alarm bells and be under systematic supervision and recall. Sealants can be given and recall is very important. In cases of minimal caries invasion remineralization of the tooth structure is a good option.

When mild progression of caries occur into the dentin and while arrest has not been achieved, interim therapeutic restorations (ITR) or silver diamine fluoride treatment may be performed. Restorative treatment is deferred if stabilization of the disease process is achieved.<sup>12,13</sup>

### Interim Therapeutic Restorations (ITR)

The ITR procedure involves removal of caries

using hand or rotary instruments with caution not to expose the pulp. Following preparation, the tooth is restored with an adhesive restorative material such as glass ionomer or resin- modified glass ionomer cement. Greatest success with single surface or small two surface restorations has been reported.<sup>14</sup>

### Silver diamine fluoride (SDF)

SDF is marketed as a 38% silver diamine fluoride in a colourless liquid with a pH of 10. Studies have consistently concluded that SDF is more effective for arresting caries than fluoride varnish. A side effect is the discolouration of demineralized or cavitated surfaces. Patients and parents should be advised regarding this before hand. Recently, the FDA has approved SDF as a device for reducing tooth sensitivity.<sup>15</sup>

### Restorative treatment

Restorative treatment should be performed when the tooth structure has been destroyed by the carious process. Pharmacological management using nitrous oxide, sedation and general anaesthesia may be used in the uncooperative young patient and in patients with special health care needs.<sup>14</sup>

Restorative treatment, pulp therapy and provision of stainless steel crowns after pulpotomy and pulpectomy can be performed depending on the extent of carious invasion.<sup>16</sup>

Stainless steel crowns have unmatched durability and have stood the test of time. In case of ECC, the early victims are the primary anterior teeth. These usually exist in a domain of neglect though their importance is manifold. After initiating an endodontic treatment procedure in these primary anterior teeth they should be aesthetically maneuvered with strip crowns, polycarbonate crowns or zirconia crowns.

### Zirconia Crowns

Zirconia crowns are a good bet. They have demonstrated good aesthetics and retention. It is a simple, practical effective and promising alternative for rehabilitation of decayed primary teeth.<sup>17</sup>

## CONCLUSION

In these exciting times of rapid knowledge

generation in the oral health domain, accurate caries risk assessment at the population level and “precision dentistry” at the person level are both desirable and achievable, but they must be based on high-quality data and rigorous methodology.<sup>18</sup>

The gold standard for a contemporary treatment approach to Early Childhood Caries remains prevention and early intervention. This begins right from the womb involving the participation from the gynecologist, pediatrician, medical practitioner, general dentist and the pediatric dentist in unison.

This would be a giant leap towards unwrapping this age old enigma.

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