Case Report

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# Multidisciplinary Approach to Management of Early Childhood Caries with One Year Follow Up: A Case Report.

**Abstract:**
Nursing caries, baby bottle syndrome or bottle mouth caries are terms used to describe forms of early childhood caries when the mandibular incisors are not affected with decay. Although, there are many treatment modalities for oral rehabilitation in children, pharmacological behaviour management is deemed necessary and sometimes the only alternative to provide the best treatment outcomes in apprehensive pre-school children in dental setting. Most often, due to the extensive progression of the caries lesions on multiple teeth and multiple surfaces, a multidisciplinary approach is necessary to restore the primary dentition back to normal function. The present article highlights a case of a pre-schooler who underwent a complete oral rehabilitation under general anaesthesia for early childhood caries.

**Key-words:** General anaesthesia, Complete oral rehabilitation, Pre-schooler, Nursing caries, Early childhood caries, Biological crown, Modified groper appliance.

## Introduction:

Early childhood caries (ECC) is the most dreadful disease concerning the dentition in children all around the world. It is the presence of one or more decayed (noncavitated and cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in child under the age of six.[1] Nursing caries is term used to describe a form of early childhood caries when the mandibular incisors are not affected with decay. This is also a differentiating factor from classical rampant caries. The most common cause of nursing caries is known to be improper feeding habits.[2] Nursing caries is seen in children below the age of 71 months. Such children usually present with a poor behaviour in the dental setup making them difficult to manage with conventional pharmacological behaviour management techniques. Therefore, pharmacological behaviour management is deemed necessary and sometimes the only alternative to provide the best treatment outcomes in such children. The commonly employed pharmacological behaviour techniques include, oral sedation, nitrous oxide inhalational sedation and general anaesthesia. General anaesthesia (GA) avoids unpleasant and unproductive confrontations with the child compared to other forms of pharmacological techniques.[3] Most often, due to the extensive progression of the caries lesions on multiple teeth and multiple surfaces, a multidisciplinary approach is necessary to restore the primary dentition back to normal. This paper discusses a case of nursing caries in a pre-schooler who underwent a complete oral rehabilitation under general anaesthesia

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## Case Report:

A 4-year-old female patient reported with her parents with the chief complaint of black spots, broken upper and lower teeth, and difficulty eating for the past one year. The patient was apprehensive with Frankl definitely negative behaviour rating. Intraoral examination revealed multiple carious lesions. (Figure 1).

Figure 1: Pre-operative intra oral photogrpahs of maxilla (left) and mandible (right) showing multiple decayed teeth of these, 51,52,61,62 and 64 were grossly decayed with mobility in 51,52,61,62. Multi-surface caries was present in relation to 53, 55, 63 and 84. Radiographic investigations revealed pulp involvement in 51,52,61,62 and mandibular molars except 84. (Figure 2)

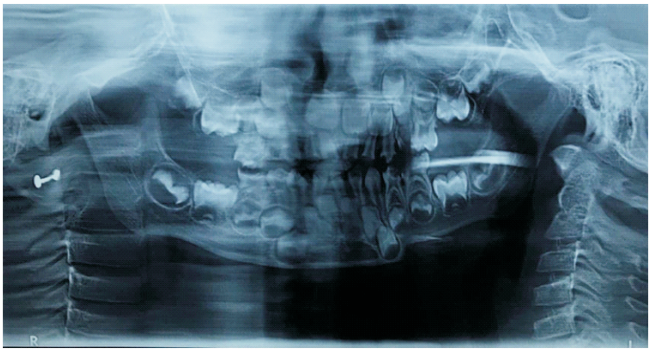

Figure 2: Pre-operative Orthopantamogram.

The parent gave a history of prolonged bottle feeding and not initiating brushing until counselled during their first visit to the department. A comprehensive treatment plan was formulated with pulpectomy in relation to 54,74,75,85; SDF application in relation to 53,55,63,65 and 84; extraction in relation to 52-62, 64 and stainless-steel crowns in relation to 54,55,74,75,84 and 85 was decided followed by aesthetic rehabilitation using modified groper's appliance and biological crown in 53 and 63.

Non pharmacological behaviour management techniques failed for the child and the option of general anaesthesia was given to the parents. The parents were explained about the general anesthesia procedure, and after obtaining their consent, the treatment was planned. The procedure was scheduled upon obtaining pediatrician consent and evaluating the blood investigations of the child. As per the NPO (nil per os) guidelines, the child was intubated for general anaesthesia.The dental procedure was performed under 2% 1:100000 LA with adrenaline and extraction was carried out with 51,52,61,62 and 64. Pulpectomy in relation to 54,74,75 and 85 with Metapex; SDF application in relation to 53,55,63,65,84 and stainless steel crown in relation to 54,55, 84 and 85.(Figure 3).

Figure 3: Intra-operative pictures showing pulpectomy procedure (left) on mandibular teeth and SDF application on maxillary teeth (right)

The procedure under general anaesthesia lasted for about 2 hours. Patient was kept under post-operative care and observation for the next 24 hours. Once the child showed signs of recovery, she was discharged from the ward. The child was then scheduled for weekly follow up for 1 month. Following this, the esthetic rehabilitation was planned for the child on chairside. A cast was obtained and modified gropers appliance was fabricated on this cast. Biological crowns were selected for 53 and 63 from the tooth bank and processed using 6% $H_2O_2$ in an ultrasonic cleaner for 5 cycles.[4] The selected teeth were sectioned 1 mm below the CEJ and adapted on the obtained cast for adjustments. (Figure 4)

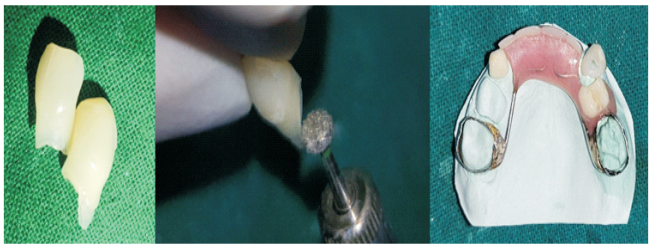

Figure 4: Left-Right: Selection of teeth for biological crown,(Left) sectioning of selected crowns till the CEJ, (Centre) Checking final fit of crown on cast along with modified groper appliance (Right)

The modified gropers appliance and the biological crowns were cemented onto the patients teeth after making final adjustments chairside. After completing the procedure, a post-operative photograph (Figure 5) and radiograph (Figure 6) were made.

Figure 5: Post-operative occlusal view of maxilla (left) showing modified groper's appliance and mandible (right)

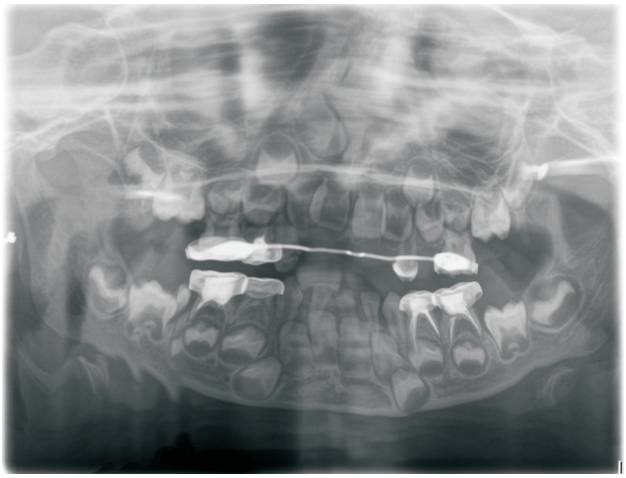

Figure 6: Post operativeorthopantamogram after 1 year of procedure

Patient was then recalled for a follow up after 1 week and then every 3 months with a current follow up of 1 year without any complications. (Figure 7)

Figure 7: Pre operative (left) and post-operative (right) view of the dentition after the completion of aesthetic rehabilitatio

## Discussion:

In recent years, with increase in preference among parents for use of GA to treat their child with negative behavior, the public acceptance of GA has also evolved.[5] In the present case, the child was difficult to deal with could be classified as Frankl's definitely negative behavior. Although GA for dental treatment is a costly alternative, in certain instances, the only main method for treating uncooperative children. For immature and children with special health care needs who require large scale conservative dentistry and also children who are very uncooperative in the dental chair, as seen in the present case, it is indicated to choose GA as a management technique.[6]

In the present case, pulpectomies, extractions, SDF application, and the stainless crown were done. A study reported by O'Sullivan et al. in 1991 in which they concluded that the ECC treatment was done under GA and better results were shown by stainless steel crowns (SSCs) compare to conventional restorations with amalgam and composite (3% vs. 29% failure rate) and vital pulpotomies showed 2% failure rate.[7] In a similar study by El Eheideb et al. reported that SSCs showed better success (95.5%) compared to amalgam and composite restorations (50%), and pulpotomies showed a 97.1% success rate.[8]

After the treatment since the child's masticatory function which was also their main concern, was back to normal hence both the child and parents were very happy and satisfied with the treatment. Malden PE et al. mentioned in their report that as per the parental observations, after the oral rehabilitation under GA the quality of life of their children which was deteriorated because of poor oral health was improved including the chewing, swallowing, and speaking.[9]

The main focus of the present case report is to make awareness about GA for patients with little or no cooperation and focus on its advantages like complete oral rehabilitation in a short period and immediate pain relief without multiple visits.

When a comp rehensive dental treatment was compared with general surgery, Lee JY and Roberts MW found that the former was simpler with patient being more stable compared

to general surgery patients thereby proving the safety of oral rehabilitation under GA with lower post operative complications.[10] Biological crowns have found to have a 89.47% of survival rate, with good marginal integrity and well accepted amongst patients as well as parents. Thus, biological crowns have been found to be a viable alternative for the restoration of grossly mutilated primary teeth.[4]

## Conclusion:

The aims of oral rehabilitation of nursing caries under GA is to restore optimal oral health in a single visit and prevent any anxiety associated with several dental chair visits for patients with ECC that require extensive dental work. Considering GA is always a 'complex' procedure, the complexity paid off when the child and parent left the hospital with a contented smile. To the best of the knowledge of the authors, no cases have been reported in literature with regards to the use biological crown for primary anterior teeth. We wish to document this case with a one year follow up for the use of biological crowns on maxillary primary canines with no complications.

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