

Short Communication

DENTAL CARIES LEADING TO PREMATURE LOSS OF BABY TEETH IMPLICATION AND MANAGEMENT

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ABSTRACT

Dental caries is a destructive process causing decalcification of the tooth enamel and leading to continued destruction of enamel and dentin, and cavitation of the tooth. Dental caries can occur soon after eruption of the primary teeth, starting at 6 months of age. Primary teeth are present for a reason. One key reason is that they save space for the permanent tooth, which will erupt into its position when the deciduous / primary tooth is lost normally.

If a primary tooth (baby or milk tooth), has to be removed early due to say, an abscess which is mostly a result of dental caries, a space maintainer may be recommended to save the space. If the space is not preserved, the other teeth may drift causing difficult to treat crowding and orthodontic problems. These "spacers" are placed temporarily, and are not permanent. They are removed when the new tooth (usually a bicuspid) erupts or the abutment teeth get loose.

Keywords: Dental caries, primary teeth, premature loss, space maintainer

Introduction :

Dental caries is an infectious disease that can occur when cariogenic bacteria colonize a tooth surface in the presence of dietary carbohydrates, especially refined sugars. The bacteria metabolize the carbohydrates, producing lactic acid, which over time demineralizes the tooth structure. The most recent national survey (1988-1994) indicated that 52% of children 5 to 9 years of age have experienced dental caries¹; among children 2 to 5 years of age, 18.7% have at least 1 primary tooth with untreated decay². Referred to as early childhood caries (ECC), dental caries in preschool children can take several forms. The most severe form has a pattern of early initial attack on the maxillary incisors with the attack continuing on other teeth as they erupt³.

Dental caries incidence begins in the permanent teeth at about 6 years with the eruption of central incisors and first molars. Among children 5 to 11 years of age, 26% have experienced one or more lesions in permanent teeth; this proportion increases to 67% among adolescents 12 to 17 years of age⁴.

Dental caries is unequally distributed among the population. Caries incidence, prevalence, and severity is greater in minority and economically disadvantaged children^{1,2,5,6}. Among children 1 to 2 years of age examined in the most recent national survey, all who had obvious dental caries in the maxillary incisors were in the group with incomes at or below 200% of the federal poverty line⁷. Among children 2 to 5 years of age, those in families at or below the poverty level are 106% more likely to have experienced dental caries than children in families with incomes above the poverty level². At this same age, black children have 43% more untreated carious primary teeth than white children and children at or below the federal poverty line have 138% more than children above the poverty line⁸.

Dental caries in primary teeth can have both short- and longer-term negative consequences. Caries lesions often cause pain because they can progress rapidly in primary teeth and involve the pulp before they are either detected or treated. About 1 in 10 children 2 to 17 years of age and 1 in 5 children from low-income families made dental visits because they were in pain or something was bothering them⁹. Regardless of their degree of progression, lesions cavitated into dentin require reparative treatment or tooth extraction; both are frequently traumatic experiences for young children. Young children with untreated, symptomatic carious teeth often present to emergency departments of hospitals for their first dental visit¹⁰. Also, untreated caries lesions in young children may be associated with failure to thrive¹¹, although evidence is conflicting regarding this association¹². Social outcomes of dental caries in young children are poorly documented, but children 5 to 7 years of age in the United States have been estimated to lose more than 7 million school hours annually because of dental problems and/or visits¹³. Untreated caries typically is cited as leading to increased infections, dysfunction,

poor appearance, and low self-esteem¹⁴, but most of these associations stem from conventional wisdom rather than observational studies.

Longer-term consequences of dental caries in primary teeth include an increased probability of caries in the permanent dentition^{15, 16} and possible loss of arch space. Lack of treatment for caries in primary teeth will often result in the premature loss of the primary teeth, especially molars, which are at risk for the longest period.

Premature loss of an incisor seldom leads to malocclusion. Loss of a deciduous second molar can cause a marked forward shift of the permanent first molar thereby blocking the eruption of the second premolar, which either gets impacted or is deflected to an abnormal position.

The severity of malocclusion caused due to early loss of a deciduous tooth depends on the following factors:

1. Premature loss of deciduous molars predispose to malocclusion due to shifting of adjacent teeth in to the space. Early loss of anteriors most often do not produce any malocclusion...
2. The earlier the deciduous teeth are extracted before the successional teeth are ready to erupt, the greater is the possibility of malocclusion...
3. In a person having arch length deficiency or crowding the early loss of deciduous teeth may worsen the existing malocclusion...

Dentists can stop this shift ahead of time with the use of a space maintainer. A space maintainer holds open the hole left by a lost tooth by keeping the teeth beside the spot in place. The dentist will remove the space maintainer once the permanent tooth has begun to erupt.

CASE A:

Rashmi visited us for the first time at age 8 yrs, with pain and pus discharge in relation to lower left back tooth region (mandibular, posterior region denoted tooth no. (FDI notation - 74, 75)

(Fig 1). Rashmi's oral hygiene was moderate, although the parents were motivated. Owing to resistance by the daughter, additional brushing by the mother was only possible as a forced action.

Examination :

The mandibular primary teeth (74,75) showed deep dentinal lesions with involvement of the pulp. Periapical radiolucency showed abscess formation.

TREATMENT:

- Extraction of teeth (74, 75) was done.
- Since the teeth were lost on *one side* of the jaw, a unilateral (one-sided) space maintainer was used which are usually described as **band-and-loop maintainers**.
- A reinforced long band and loop space maintainer was placed for additional strength and support. (Fig 2).

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Fig 1



Fig 2

CASE B:

Amit, a male patient of age 9 years reported to us with acute pain in the lower left quadrant and occasional pain in the upper left one. The pain was spontaneous in the lower left tooth and made the boy wake up in the night and cry. The pain in the upper right tooth gave him discomfort by food lodgement but pain was not severe.

Examination:

Severely mutilated teeth in relation to upper and lower back regions (maxillary and mandibular posterior teeth, FDI notation -54, 64, 73, 74, 75, 83, 84, 85) (Fig 5). With pulp involvement and periapical radiolucency were observed.

TREATMENT:

- Extraction, bilaterally of deciduous first and second molars and canine (73, 74, 75, 83, 84, 85) in the mandibular arch was done (Fig 3) followed by placement of lingual holding arch (LLHA) (Fig 4).
- Extraction bilaterally of deciduous molars on right and left in the maxillary arch (54, 64) was done followed by placement of Nance palatal arch (NPA) for maintenance of space for eruption of its succedaneous teeth.



Fig 3



Fig 4



Fig 5



Fig 6

POST-OPERATIVE INSTRUCTIONS FOR SPACE MAINTAINERS APPLIANCES.

The children and parents were instructed as follows:

- No eating or drinking for 30 minutes following cementation. Soft food only on the day of placement.
- Please do not allow your child to manipulate the appliance. Keep his/her fingers out of the mouth.
- The appliance should not cause significant pain, yet the cemented molar bands may slightly impinge on the gums, causing some discomfort for a few days.
- With larger orthodontic appliances, your child's speech may be temporarily altered. Once the child grows accustomed to the appliance, he/she will resume fairly normal speech and oral functions.
- Continue normal oral hygiene practices. Brush well around the appliance.
- Avoid all sticky or chewy candy and food. NO GUM!
- Check your child's appliance daily when you assist with brushing. If the appliance feels loose, please call us. A loose appliance can cause significant damage to the surrounding soft tissue. Should the appliance loosen and come out, please retain it and call your dentist.

FOLLOW UP:

Following the application of a space maintainer the child visited us every six months to check the condition of the device, to make sure the appliance is still fitting properly and for ensuring that it was still secure/not loose and examination of rest of the teeth were done for appropriate positioning of the succedaneous teeth at eruption.

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