

FREQUENCY OF SIMULTANEOUS PRESENCE OF DENTAL CARIES IN MANDIBULAR FIRST PERMANENT MOLAR AND ITS ANTIMERE IN CHILDREN OF LAHORE CANTT

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ABSTRACT

The study was a cross sectional observational study undertaken to evaluate the frequency of dental caries in mandibular first molar and its antimere in the opposite mandibular quadrant in eight to ten years old children seen at 28 Military Dental Centre. The study involved 100 male and 100 female children of age 6-10 Years. 80(80%) males exhibited evidence of simultaneous presence of dental caries in mandibular first permanent molar and its antimere while 20(20%) males did not show any evidence. 85(85%) females exhibited evidence of simultaneous presence of dental caries in mandibular first permanent molar and its antimere while 15(15%) females did not show any evidence. Dental caries is frequently observed in the antimere of mandibular permanent first molar when the dental caries involves mandibular permanent first molar.

Key Words: Pit and fissure morphology, dental caries.

INTRODUCTION

Dental caries is a slowly progressing disease process that takes years to develop. The prerequisites for dental caries include a susceptible host with cariogenic bacteria such as *Streptococcus Mutans*. Another important contributing factor is the dietary intake of refined sugar. Host factor cannot be neglected as it allows for dental caries to progress.¹ Quality and quantity of saliva affects the resistance of the host to dental caries. The niches responsible for protecting the microorganisms anatomical features of the pits and fissures allows the necessary substrate for the cariogenic bacteria to grow in a protective environment.² This factor is a hidden fact that most of the time the patient informs of maintaining good oral hygiene with minimum use of cariogenic diet but still dental caries develop in such patients despite observing the precautions. There are different shapes of pit and fissures that shelters the microorganisms. The pit and fissures are divided into I-type, V-type,

Y-type, U-type and IK type on the basis of the shape.² The bottle neck type of fissures hide the carious lesion which can go undetected for timely management.¹

The microorganisms in the biofilm are acid producing and lead to a reduction in pH that is responsible for dissolution of minerals of the tooth and thus resulting in lesions. The lesions are considered as signs of this process. An equilibrium in the process of demineralization and remineralization prevents the formation of carious lesions. Prevention and controlling the cariogenic factors reduces the incidence of dental caries.¹ The modus operandi adopted for prevention of dental caries¹ include good oral hygiene with assistance if required, fluoridated water, fluoridated tooth paste, fluoride varnish applied by dental professional, fissure sealants, use of xylitol containing chewing gums to stimulate saliva if salivary flow low.

This study was done to exhibit the frequency of the presence of dental caries in first mandibular molars and its antimere in the opposite mandibular quadrant. Such an observational study has never been performed before and will allow the simultaneous intervention by preventive therapy in the form of pit and fissure sealants in the antimeres to prevent progress of dental caries along with the restoration of first mandibular molars.

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METHODOLOGY

The study was carried out in 06 months from 1st January 2012 to 30th June 2012 at 28 Military Dental Centre. 100 male and 100 female children of eight to ten years were selected by using lottery for randomization. They were mentally and physically stable. The children selected were with good oral hygiene and were supervised by the parents during the tooth brushing. The children were avoiding cariogenic diet as the parents were aware of the effects of such diet and confirmed that they had not allowed their children to take cariogenic diet since the eruption of deciduous dentition. Dietary chart was formulated in order to evaluate the dietary intake of the child in a week which was inquired from the parents. Proper illumination with double image mirrors was used for observation of the dentition.

It was a cross sectional observational study. The mandibular permanent first molars and the antimeres of the opposite side were observed for presence of dental caries. The frequency was then calculated. A table and a figure were formulated showing the frequency.

RESULTS

The study involved 100 male and 100 female children of age 6-10 years. On observation it was found that 80 male children exhibited simultaneous

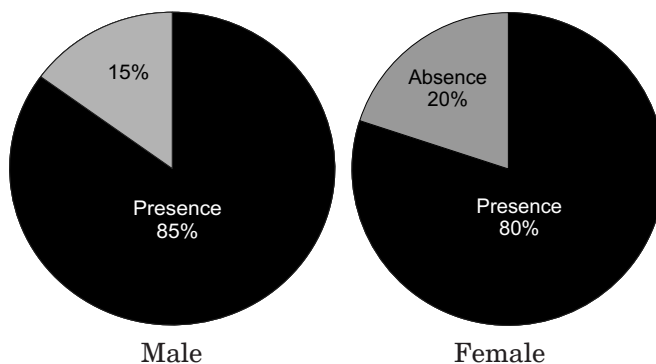


Fig 1: Frequency of simultaneous presence of dental caries in first mandibular molar and its antimeres in children

presence of dental caries in both first permanent mandibular molars and its antimeres on the opposite side while this observation was absent in 20 male children. 85 female children exhibited simultaneous presence of dental caries in both first permanent mandibular molars and its antimeres on the opposite side while 15 female children did not exhibit this observation as shown in Table 1. The percentage of children exhibiting simultaneous presence of dental caries in both first permanent mandibular molar and its antimeres was 80% for male children and 85% for female children while this relationship was absent in 20% male and 15% female children as shown in Table 1. The respective distribution of the frequencies according to gender is shown in Figure 1. The results clearly show that the frequency of simultaneous incidence of dental caries in first mandibular molars and its antimeres in the opposite side of the same arch is high.

DISCUSSION

Dental caries is a dynamic process for which multiple studies have been done to determine the risk factors. Presence of plaque along with cariogenic diet and the essential cariogenic microorganisms (*Streptococcus Mutans*) have been found to lead to carious lesions if sufficient time is available for the chemical process of acid production and dissolution of mineral contents of tooth to shift the balance from remineralization to demineralization.³ The factor of pit and fissure morphology is often not observed that plays an important role in this ubiquitous process acting as safe shelter for the microorganisms to grow in.⁴

The morphology of the pit and fissures of teeth for individuals is a genetic factor, there could be correlation between race factor and anatomy of the pit and fissures.⁴ The IK type of fissures with a narrow opening and a broad base is a prevalent morphology that hides the carious niches and results in a well protected environment for the microorganisms that are not observed earlier for preventive intervention to arrest the incipient carious lesions.⁵

TABLE 1: FREQUENCY OF SIMULTANEOUS PRESENCE OF DENTAL CARIES IN FIRST MANDIBULAR MOLAR AND ITS ANTIMERE IN CHILDREN

Gender	Simultaneous Presence of dental caries in first permanent mandibular molar and its antimeres		Absence of Simultaneous Presence of dental caries in first permanent mandibular molar and its antimeres	
	n	%	n	%
Male (n=100)	80	80%	20	20%
Female (n=100)	85	85%	15	15%

No such study exists that compares the frequency of simultaneous presence of dental caries in first molars and its antimere. This observational study has an importance as pit and fissure morphology was suspected to be the cause of occurrence of dental caries as the children had good oral hygiene and were not taking any cariogenic diet that would promote the process of caries. There was no significant difference among genders related to the simultaneous occurrence of dental caries in first molars and its antimere in this study. The only drawback of this study was that the morphology of pit and fissure caries was not evaluated histologically that would have allowed to demonstrate the pattern of pit and fissure in the first molars and its antimeres.

A study utilizing stereomicroscopic examination of teeth sections with the extensions of early lesions, in which a primary fissure carious lesion the caries confined to the fissures and grooves of the occlusal surfaces of teeth may be under taken to describe the initiation and extension of carious dental process in pits and fissures of different types.

This study clearly shows that once the mandibular first molar is involved with caries then its antimere should be subjected to preventive interventions such as pit and fissure sealants and regular follow-ups to observe the retention of pit and fissure sealants and to deduct any evidence of caries in its antimere.

CONCLUSION

The simultaneous occurrence in most of the mandibular first permanent molars and its antimere indicates that on initiation of carious lesion on one of the mandibular first permanent molar the antimere in the opposite sextant should be kept under observation and preventive intervention on the antimeres should be initiated to prevent the occurrence of pit and fissure caries.

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