بسم الله الرحمن الرحيم

(وقل ربي زدني علماً)

صدق الله العظيم

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Clinical and Radiographic Comparative Study of the Prevalence of Mesiodens among Egyptian and Yemenese School Children

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DEDICATION

To my parents who support me,

To my wife for her patience and support,

To my lovely kids.

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Introduction

Supernumerary teeth are extra number of teeth when compared with the normal dental formula and can be found in almost any region of the dental arch with a particular predilection for the upper anterior region which is called mesiodens ***(Kathleen and Magdalena, 2003).***

Such teeth may occur in both dentitions but less frequent in primary dentition and present as a single or multiple, unilateral or bilateral, in one or both jaws ***(Henrique et al., 2006).***

Supernumerary teeth might be erupted or impacted, and sometimes fused to the adjacent tooth ***(Mark and Wayne, 1997).***

Multiple supernumerary teeth are uncommon and usually associated with variable syndromes like cleidocranial dysostosis, Gardner and Down syndromes. They are also presented in cases of cleft lip and palate. ***(Nizam Abdullah et al., 2004).***

They are classified according to their location in the dental arch into mesiodens(between upper two central incisors), paramolars and distomolars. As regarding the morphology such teeth are classified into supplemental (tooth like) and rudimentary which are either conical, tuberculate or molariform ***(Primosch, 1981)***.

A mesiodens is a supernumerary tooth located in the maxillary incisor region which is the most common type of supernumerary teeth. The overall prevalence of mesiodens has been estimated at 0.15-1.0% of

the population which representing 80% of all supernumerary teeth and they occur more frequently in boys than girls with a ratio of approximately 2:1. They are usually found closely related to the crown of the central incisors, often in a palatal position but occasionally in the midline where they may erupt. They may be found bilaterally and inverted mesiodens are also common ***(Seddon et al., 1997).***

The shape of mesiodens may vary from a simple conical form to a large, more complicated crown shape with a number of tubercles, the conical forms are more common and they are more likely to erupt between the central incisors as diminutive but fully developed teeth. In contrast, tuberculate mesiodens tend to develop later and present with incompletely developed roots. They are usually located palatal to the central incisor. They rarely erupt and are larger than the conical variety. They are also more likely to delay the eruption of the central incisor ***(Hattab et al., 1994).***

Mesiodens may cause several complications and harmful effects on the dentition due to their position in the upper anterior segment. These complications may be manifested as absence of adjacent incisors, over retention of primary teeth, bodily displacement or rotation, impaction, diastema, root resorption, loss of vitality of adjacent teeth, cyst formation and eruption into the nasal cavity ***(Eid and Taha, 1999).***

It is worth pointing out that no such study was undertaken in Yemen, while previous few studies in Egypt were done and published on a small sample number.

Review of literatures

Etiology:

The exact etiology of supernumerary teeth is still unknown, there are different theories concerning the cause of mesiodens ***(Primosch, 1981).***

It was originally postulated that mesiodens represents a phylogenetic relic of extinct ancestors who had three central incisors. This theory, Known as phylogenetic reversion (atavism), has now been largely discarded by embryologists ***(Von Arx, 1992).***

A second theory known as dichotomy theory suggests that the tooth bud is split to create 2 teeth, one of which is the mesiodens. Supporters of this theory believe that dichotomy represents complete germination, which also occurs frequently in the anterior maxilla ***(Sedano and Gorlin, 1969).***

The third theory, involving hyperactivity of the dental lamina, is the most widely supported. According to this theory, remnants of the dental lamina or palatal extension of active dental lamina are induced to develop into an extra tooth bud, which results in a supernumerary tooth ***(Primosch, 1981).***

Genetics are also thought to contribute to the development of mesiodens, as such teeth have been diagnosed in twins, siblings and sequential generations of a single family ***(Brook, 1984).*** In twins

unilateral mesiodens may present as mirror images and the same numbers of supernumerary teeth are located in similar regions of the mouth ***(Seddon et al., 1997).***

Some authers believed that such teeth developed due to autosomal dominant inheritance with incomplete penetration ***(Sedano, Gorlin, 1969 and Sharma, 2003).***

A sex linked pattern has also been proposed by other investigators as males are affected twice as frequently as females ***(Hattab et al., 1994).***

Types of mesiodens:

Mesiodens can be classified according to their dentition into primary and permanent mesiodens and according to their morphology (conical, tuberculate, molariform and supplemental). Supplementary mesiodens resemble natural teeth in both size and shape. Whereas, rudimentary mesiodens exhibit abnormal shape and smaller size ***(Primosch, 1981).***

Supernumerary primary teeth are most often mesiodens or supernumerary laterals. Children with supernumerary primary teeth are present clinically, a supernumerary permanent teeth are often evident radiographically ***(Luten, 1967).***

Conical mesiodens usually occur singly. They are generally peg-shaped and are usually located palatal between the maxillary central incisors, tending of displace them. Conical mesiodens usually have a completely formed root and can erupt into the oral cavity ***(Primosch, 1981).*** However, they may be inverted, with the crown pointing superiorly, in which case they are less likely to erupt into the oral cavity. Inverted conical mesiodens have occasionally erupted into the nasal cavity ***(Atasu, Orguneser, 1999. and Hung Lin et al, 2004).***

Tuberculate mesiodens are barrel shaped with several tubercles or cusps, and have incomplete or abnormal root formation. In contrast to conical mesiodens, tuberculate mesiodens rarely erupt but rather delay the eruption of the permanent incisors. They can develop either unilaterally or bilaterally and are commonly associated with other supernumerary teeth. Tuberculate mesiodens are usually develop later than conical mesiodens and occupy a more palatal position. A third much rare type is the molariform mesiodens, which has a premolar-like crown and a completely formed root ***(Primosch, 1981).***

Clinical and Radiographic diagnosis:

A- Clinical assessment:

Careful and detailed clinical examination will be valuable in detecting the reason for an unerupted central incisor. Certain clinical pictures, as retention of the deciduous central incisor, bulging of the soft tissue on the labial or palatal mucosa, or loss of space in the arch will be observed. Rotation of the central incisor is usually caused by the presence of mesiodens. The degree of the rotation depends on the