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Case Report

Genetics and presence of non syndromic mesiodens in siblings

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ABSTRACT

Supernumerary teeth is a well recognised phenomenon now a days. Supernumerary teeth are those that exceed normal dental formula. Mesiodens is one of the most common examples of supernumerary teeth. It can be associated with syndromes or it can be non syndromic. In this article, the role of genetics in the development of mesiodens is discussed.

1. Introduction

Mesiodens exceed normal dental formula despite of their morphology and location.[1] Presence of extra tooth in dental arch is called hyperdontia. Mesiodens can be seen in deciduous, mixed and permanent dentition as well. It can be solitary, multiple, unilateral, bilateral. Prevalence of mesiodens is 0.3-0.8% and in permanent dentition 1.5-3.5%.[2,3] Usually mesiodens is more prevalent in men than women.[4] Mesiodens is generally asymptomatic and detected during routine dental checkup but sometimes it can be associated with various complications like spacing, crowding,ectopic eruption etc. It is more frequently seen in maxilla, specifically in premaxilla region.[3,4] The etiology of mesiodens is multifactorial and genetics play a crucial role. The treatment plan depends on thorough clinical and radiographical examination.

1.1. Etiology

Etiology of mesiodens still remains unclear and it is multifactorial.[3] There are two popular theories present regarding the etiology of mesiodens. According to the dichotomy theory, a single tooth germ splits into two and as a result two teeth are developed. Size of these two teeth may be equal or unequal.[3,4]

Another theory suggests that mesiodens can be formed due to hyperactivity of dental lamina. Heredity is an important factor while discussing development of mesiodens. According to Nislander & Sujaku (1963), supernumerary teeth may be an autosomal dominant trait. Some theories suggests that presence of mesiodens and gene mutation are strongly associated with each other. Bruning et al stated that mesiodens can be sex linked also as it is commonly found in males.[3–5] Multiple supernumerary teeth can be associated with syndromes like cleidocranial dysplasia, Gardener syndrome, Ehlers danlos syndrome etc. Non syndromic familial mesiodens is very rare. Mesiodens can be developed in heterozygous or homozygous gene

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mutation. APC gene [5q21- q22] mutation which is responsible for Gardener syndrome, may one of the factors causing supernumerary teeth. Sudden inactivation or forced activation of APC gene is suggestive of supernumerary tooth development.[3–8]

1.2. Diagnosis

Most of the times supernumerary tooth remains unnoticed until they cause any disturbance. It can be diagnosed during routine dental check up or when patients come with some other dental problems. Clinical and Radiographical examination both are crucial to detect the number, position and morphology of mesiodens. Generally occlusal radiography, RVG or IOPAR can be done. In case of submerged or ectopic mesiodens, CBCT is required.[9]

2. Case Report

A nine year old girl and her elder brother, who was eleven years old, came to department of Pedodontics and Preventive Dentistry, with their grandfather with the chief complaint of presence of extra teeth in the mouth.

2.1. Case 1

The elder brother (11 years old boy), complained about one extra teeth present in his mouth.

Medical history: Non relevant

Family history: Patient gave history of presence of extra tooth and irregular arrangement of teeth in his mother and maternal aunt (sister of his mother).

Dental history: This was the first visit.

Pre Natal history: Non relevant. No history of viral or bacterial infection and or any trauma during pregnancy. No history of nutritional deficiency or alcohol use & smoking.

Natal history: Child was full term and delivery through c-section.

Post natal history: No history of allergy or hospitalisation.

General examination: Height 4 ft 3 inch and weight 35 kg, gait- normal. Built- mesomorphic, posture- erect

Extra oral examination:

Facial profile: Convex

Facial form: Mesoproscopic

Facial divergence: Posterior divergent

Shape of head: Mesocephalic

Intraoral examination: One conical shaped mesiodens was present behind the two maxillary central incisors. Anterior cross bite was present.

Radiographic examination: RVG was taken

Treatment planning: After orthodontic consultation, extraction of mesiodens was planned.

Treatment done: Extraction was some under local anaesthesia and bleeding was controlled. Post operative instructions were given to the grandfather. Antibiotics and analgesics were prescribed.

Recall visit: Patient was recalled after 5 days for further orthodontic treatment.

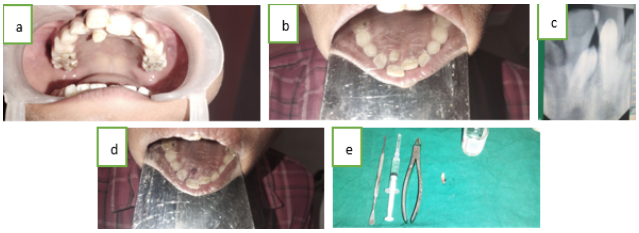

Fig. 1: a: Preoperative buccal view (upper row - left); **b:** Preoperative palatal view (upper row - middle); **c:** RVG (upper row- right); **d :** Extracted mesiodens (lower row- left); **e:** After bleeding control (lower row- right)

2.2. Case 2

The younger sister (9 years old), complained about presence of 2 extra teeth in her mouth

Medical history: Non relevant

Family history: Patient gave history of presence of extra tooth and irregular arrangement of teeth in his mother and maternal aunt (sister of her mother)

Dental history: This was the first time she visited a dentist.

Prenatal history: Non relevant. No history of viral or bacterial infection and or any trauma during pregnancy. No history of nutritional deficiency or alcohol use & smoking.

Natal history: Child was full term and delivery through c-section.

Post natal history: No history of allergy or hospitalisation.

General examination: Height 4 ft and weight 32 kg, gait- normal. Built- mesomorphic, posture- erect

Extra oral examination:

Facial profile: Convex

Facial form: Mesoproscopic

Facial divergence: Posterior divergent

Shape of head: Mesocephalic

Intraoral examination: Two small mesiodens was present in between maxillary central incisors. Flaring of central incisors were noticed

Radiographic examination: RVG was taken

Treatment planning: After orthodontic consultation, extraction was planned.

Treatment done: Extraction was some under local anaesthesia and bleeding was controlled. Post operative instructions were given to the grandfather. Antibiotics and analgesics were prescribed.

Recall visit: Patient was recalled after 5 days for further orthodontic corrections.

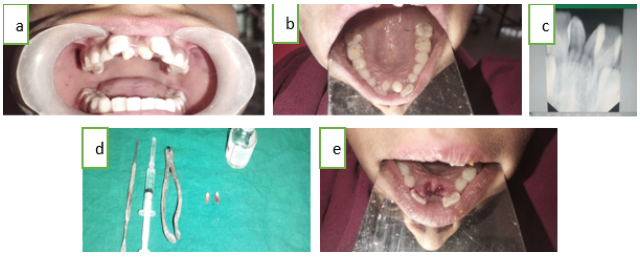

Fig. 2: a: Preoperative buccal view (upper row - left); **b:** Preoperative palatal view (upper row- middle); **c:** RVG (upper row- right); **d:** Extracted mesiodens (lower row- left); **e:** After bleeding control (lower row- right)

3. Conclusion

According to Chidgonza, mesiodens should be extracted at the age of 8 to 10 years, when the roots of permanent incisors are fully formed.[3,4,9] The best treatment option is the extirpation of unerupted mesiodens while permanent teeth are in formative stage.[9] Some suggests that mesiodens should be kept under observation so that it can't cause any abnormality during the eruption of incisors. If presence of mesiodens cause malalignment of teeth, orthodontic treatment should be planned and mesiodens should be extracted according to the planning at right age.[10,11]

4. Discussion

Mesiodens is the most common supernumerary teeth found in anterior maxilla. Mesiodens can be conical, tuberculate, or molariform. Sometimes it resembles normal teeth. It can be present vertically or horizontally, sometimes it can be impacted. Radiographic examination is very crucial to determine the root morphology whether it is straight or curved, root formation is completed or not. Supernumerary tooth in anterior region should be extracted only when the roots of permanent incisors are fully formed.

Mesiodens can interfere with normal occlusion or normal eruption process. It can cause flaring of incisors, crossbite, midline diastema, malalignment of teeth. Depending on the position, type and complications, extraction is the treatment of choice. There's no clear opinion regarding the treatment.

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6. Conflict of Interests

The authors have no competing interests to declare that are relevant to the content of this article.

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