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## MESIODENS OCCURRING IN A 6 YR OLD CHILD- A RARE CASE

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### ABSTRACT

Mesiodens is a midline supernumerary tooth commonly seen in the maxillary arch. It is the most significant dental anomaly affecting permanent dentition mainly and primary dentition rarely. The incidence of supernumerary teeth varies between 0.45-3%, depending on the literature source, and is more common in males than in females (proportion 2:1). The etiology is still unknown and not well understood. Since very few supernumerary teeth have been reported for the primary dentition. The present case is quite unusual as this is a report of a mesiodens in primary dentition and that too in a girl.

**Keywords:** Mesiodens, Supernumerary Teeth, USAG-1 and Hyperdontia

### INTRODUCTION

Mesiodens is a supernumerary tooth with a cone shaped crown and a short root. Mesiodens, represent 80% of all supernumerary teeth. The supernumerary teeth may occur in both dentitions, but they are more frequently seen in the permanent dentition. The prevalence of supernumerary teeth ranges from 0.8 to 2.1% in deciduous and permanent dentition, respectively [1]. The incidence of mesiodens in permanent dentition ranges from 0.15%-3.8%, whereas

in primary dentition it ranges from 0-1.9% [1, 2, 3]. They are twice more common in boys, while no significant sex distribution is noted in primary supernumerary teeth [4]. [5] reported prevalence of supernumerary teeth as 0.07% in Japanese children.

The prevalence of supernumerary teeth in primary dentition is lower because it is under reported and it is often overlooked, because the supernumerary teeth are often of normal shape (supplemental type), erupt normally,

and appear to be in proper alignment; and can be mistaken for germination and fusion anomalies [6].

Morphologically, mesiodens may be of three types: the most commonly seen is conical, while tuberculate and supplementary types. Mesiodens may erupt normally, stay impacted, appear inverted, take an ectopic position, or follow an abnormal path of eruption. It is seen that the frequency of erupted primary supernumerary teeth is much higher than that of the permanent supernumerary teeth (73 vs 25%) [1].

The etiology of supernumerary teeth is not understood. Development disturbance originate in the odontogenesis and begin around the 40th week. It might occur on both dentitions, being scarcer in the primary one. Several hypotheses are mentioned for etiology of the supernumerary teeth, among them, hyperactivity of the Dental Blade, is most widely accepted. Other suggested theories are split in tooth bud (dichotomy theory), and a combination of genetic and environmental factors (unified etiologic explanation). Brook concluded that supernumerary teeth are more common in the relatives of affected children than the general population [7].

With the benefit of the recent advances in understanding the reciprocal ectoderm-mesenchyme interactions of biochemical

signaling. A recent report suggests the supernumerary maxillary incisor appears to form as a result of the successive development of the rudimentary upper incisor tooth. Role of Uterine sensitization associated gene-1 (USAG-1), a BMP antagonist that plays important roles in the local regulation of BMP signaling by binding and neutralizing BMP activities. USAG-1 controls the number of teeth in the maxillary incisor region by regulating apoptosis. USAG-1 deficiency results in supernumerary teeth [8].

Another study identified key mechanistic features responsible for supernumerary tooth formation. The ablation of *Apc* function or the constitutive activation of  $\beta$ -catenin in embryonic oral epithelium results in supernumerary tooth formation. The formation of supernumerary teeth via *Apc* loss-of-function is non-cell-autonomous. A small number of *Apc*-deficient cells are sufficient to induce surrounding wild-type epithelial and mesenchymal cells to participate in the formation of new teeth [9].

### CASE REPORT

Parents of a 6-year-old girl reported to the Department of Pedodontics and Preventive Dentistry of Panineeya Dental College and Hospital, Hyderabad with the chief complaint of a gradual development of an odd appearance of teeth. The girl was following

childhood immunization schedule strictly. The medical and family history was noncontributory. No significant abnormality was noted in the extra-oral examination (**Figure1**).

Intra-oral examination revealed a complement of the primary dentition with erupted permanent lower central incisors and first permanent molars. A conical mesiodens was

noted between the central incisors (**Figure2**). Intra-oral periapical radiograph of the maxillary anterior region showed a completely formed mesiodens with a conical crown and a root (**Figure 3**). The mesiodens was extracted under local anesthesia, after making a preoperative impression for record (**Figure 4**).



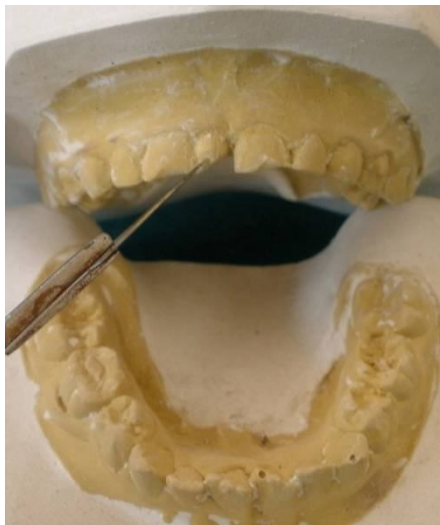
**Figure 1: Extraoral View**



**Figure 2: Intraoral View**



**Figure 3: Intra-Oral Periapical Radiograph Showing Fully Formed Mesiodens**



**Figure 4: Upper and Lower Casts –Pointer Placed on the Mesiodens**

## DISCUSSION

Supernumerary teeth are more common in the permanent than the primary dentition. In the latter, the majority occur in the maxillary lateral incisor region or as a mesiodens. Indeed, in study conducted in the USA by Robert et.al, all 26 cases of primary supernumerary teeth examined were found to

be lateral incisors (supplemental) teeth in the primary dentition [10].

Ravn reported 0.10% hyperdontia, in children from 3 to 6 years of age. Hyperdontia of primary teeth was found only in boys, and it related only to the maxillary lateral incisors. Author concluded anomalies of deciduous teeth show a high degree of

association with the finding in the permanent dentition. Patients with hyperdontia of primary teeth displayed anomalies in permanent dentition in 85.7% [11]. Another study reported hyperdontia in 0.5% of children, most cases of hyperodontia occurred in the maxilla. Half the supernumerary teeth were maxillary lateral incisors, and they were often followed by hyperdontia in the permanent dentition, whereas cases with supernumerary central incisors were less often followed by hyperdontia in the permanent dentition [12].

Supernumerary teeth may occur as a single isolated dental anomaly or in association with other developmental anomalies, or syndromes such as cleft palate and cleft lip, cleidocranial dysostosis, Down's syndrome, and Gardner's Syndromes. The incidence of supernumerary teeth in cleft lip and cleft palate case may be as high as 28%.

Mesiodens or mesiodentes may precipitate a variety of complications, for example, crowding, delayed eruption, diastema, rotations, cystic lesions, and resorptions of adjacent teeth, etc., to the developing dentition/occlusion of a child. Early removal of these teeth is required so that complications can be averted. The results of the study by Whittington & Durward confirmed that, when there is hypodontia, hyperdontia, gemination,

or fusion of teeth in the primary dentition, there is an increased likelihood of anomalies of the succedaneous permanent teeth. Because of this close relationship between the dentitions, early identification of anomalies of the primary teeth can allow the dentist to investigate further and plan for treatment at the appropriate time [13].

The management of supernumerary teeth in primary dentition depends on the type and position of the teeth and their effect on adjacent teeth. If the teeth are not interfering with the development and eruption of adjacent teeth and there is no evidence of cyst formation, the correct decision would be to observe till the child is old enough to tolerate the surgical procedure. Before removal it is best to localize the tooth and relation of the root to other primary teeth, unerupted permanent teeth, floor of the nose.

Detection of mesiodens or supernumerary teeth is best achieved by clinical examination and radiography (IOPA, Occlusal, Orthopantomogram).

If there is no concomitant hypodontia, the choice of treatment of mesiodens is removal. Surgical removal of the mesiodens at 5-6 yrs of age, one year prior to the eruption permanent incisor teeth minimizes the risk of damage to the permanent incisors crown.

In the present case, the erupted conical mesiodens in the six-year-old girl was a great aesthetic concern to the parents. And an immediate extraction of the mesiodens was undertaken under local anesthesia to prevent the development of psychological trauma to the child, to minimize complications, and to achieve a good prognosis.

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