A Case Series: On Clinical Sequelae & Management of Mesiodens in Children

S Balaji [1], Neeraj Kant Panwar[2], Abhay Agarwal[3], Tanya Agarwal Paruthi[4], Asib Ahmad[5], Nishma Niharika[6], A. Arivu Stalin[7]

Post Graduate 3rd Year[1]
Dept. of Pediatric & Preventive Dentistry
Kalka Dental College And Hospital
Meerut, UP

Professor[2]
Dept. of Pediatric & Preventive Dentistry
Kalka Dental College And Hospital
Meerut, UP

Professor & HOD[3]
Dept. of Pediatric & Preventive Dentistry
Kalka Dental College And Hospital
Meerut, UP

Assitant Professor[4]
Dept. of Pediatric & Preventive Dentistry
Kalka Dental College And Hospital
Meerut, UP

Reader[5]
Dept. of Pediatric & Preventive Dentistry
Kalka Dental College And Hospital
Meerut, UP

Post Graduate 3rd Year[6]
Dept. of Pediatric & Preventive Dentistry
Kalka Dental College And Hospital
Meerut, UP

Post Graduate 2nd Year[7]
Dept. of Pediatric & Preventive Dentistry
Kalka Dental College And Hospital
Meerut, UP

Access This Article Online

Website:
www.healtalk.in

Quick Response Code:

DOI: https://doi.org/10.5281/zenodo.11000751

Introduction

Supernumerary teeth are teeth, or structures like teeth, that exist in addition to the 20 primary and 32 permanent teeth. They may have erupted or remain unerupted. They represent a distinct abnormality in the pattern and morphogenesis of development that affects the tooth - bearing regions of both dental arches.[1]

A mesiodens is a supernumerary tooth that is located in the maxilla between the two central incisors. The exact cause of mesiodens tooth etiology remains unclear. However, various ideas have been proposed, including disruptions in dental development, syndromic disorders, and genetic and environmental variables.[2] This cases series describes about two clinical scenarios with their management.

Case Report 1: An 8-year-old male reported to Department of Pediatric and Preventive dentistry with a chief complaint of space in the upper front tooth region since many years. On intraoral examination there was grade III mobility in relation to the maxillary right and left primary central incisors i.e., 51,61 and. To rule out the different pathologies intraoral periapical radiograph(IOPA)was taken which showed presence of Super-numerary tooth that was with almost 1/3 of the root formation and also 51 & 61 shows physiologic root resorption. Considering the poor prognosis of 51 and 61,the treatment was planned to extract 51 and 61 along with the mesiodens. Following the extraction procedure, the patient is currently undergoing regular follow-up appoint-ments to monitor their progress. **Fig 1**

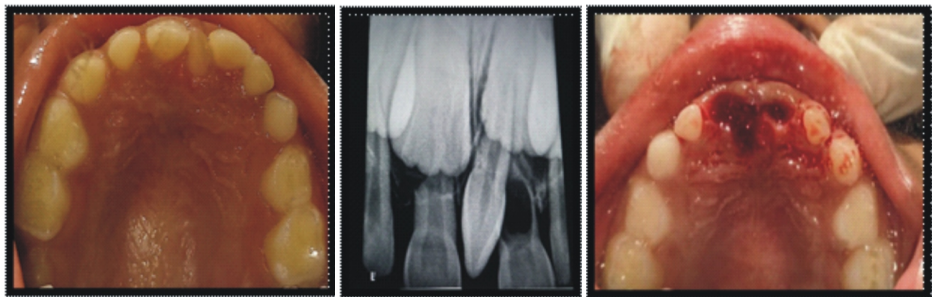
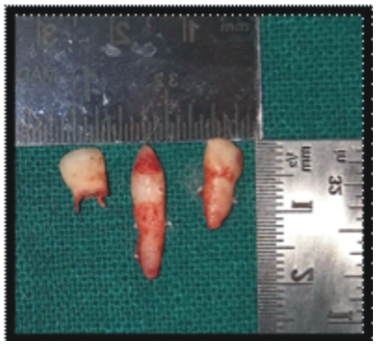


Figure 1: a, b, c and d

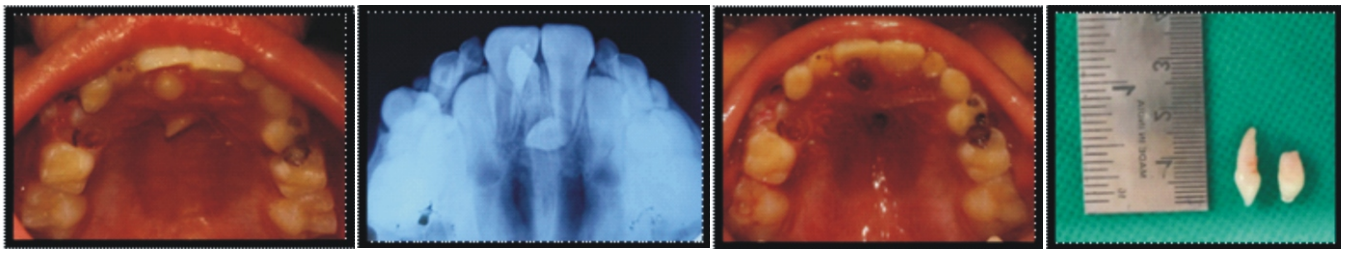


(a) Preoperative showing Occlusal view of 51,61 & amp; maxilla mesiodens (20mm)
(b) IOPA showing Presence of mesiodens between 51&61
(c) Post operative occlusal view of maxilla
(d) Picture extracted Post extraction of Mesiodens

How to cite this article: Balaji S et al.: A Case Series: On Clinical Sequelae & Management of Mesiodens in Children, ***HTAJOCD.2024; March-April(4):31-33.***

Case Report 2: A 7-year-old male patient reported to the Department of Pediatric and Preventive dentistry with a chief complaint of two extra supernumerary teeth present in the upper front tooth region since 4 years. On intraoral examination, two mesiodens were present in the palatal region. On investigation, Occlusal radiograph was taken which showed the presence of mesiodens (super-numerary tooth)present palatally associated to the root apex of the 21 which had crown with 1/3rd root (Nolla's stages of 7) and lingually located mesiodens had a fully formed crown and root. The extraction of the two teeth was planned and patient was asked to come for follow up every 2-3 month**.**

After the extraction procedure, the patient is now undergoing scheduled follow-up appointments to observe their recovery**. Fig2**



(a) Preoperative Occlusal view of extracted extracted (b) Occlusal radiograph showing presence of two Mesiodens (c) Post operative occlusal view of maxilla after extraction of the two Mesiodens (d) Picture showing the two mesiodens (17mm&10mm)

Figure 2: a, b, c and d

Discussion

Mesiodens is common to encounter in the primary dentition, which is thought to be the most prevalent dental abnormality affecting permanent dentition. It occurs in the maxilla in 80–90% of situations, with the anterior region representing half of these cases. In contrast to the female population, the male population is more likely to be affected (1:2).[2]

According to Antonappa et al. (2008), supernumerary tooth usually occur in the premaxilla and can be single, numerous, unilateral, or bilateral in distribution. They can result in tooth crowding, midline diastema, or the production of dentigerous cysts, among other dental issues.[1][3]

A few theories have been proposed; however, the exact cause of mesiodens remains unknown.[4] These consist of the tooth bud's dichotomy, the dental lamina's hyperactivity, and hereditary and environmental influences. Additionally, it can be associated with conditions that include Gardner's syndrome, cleido-cranial dysplasia, and cleft lip and palate.

Among these theories, the hyperactivity of the dental lamina is considered the most reasonable explanation in the development of mesiodens.[2][4] This theory suggests that there is a localized, independent, and conditional hyperactivity among the remaining epithelial cells of the dental lamina. This excessive activity of the dental lamina is associated with abnormal embryonic development, influenced by genetic factors.[5]

According to the shape and size, two subclasses are considered in the classification of mesiodens, namely eumorphic and dysmorphic. Eumorphic mesiodens closely resembles a normal-sized central incisor. Dysmorphic (heteromorphic) mesiodens are further categorized into four types: supplemental, tuberculate, odontomes, and conical.

Conical or peg teeth are smaller in size compared to normal teeth, featuring a conical crown and a rudimentary root. This form is the most commonly encountered.

Tuberculate teeth have smaller crowns and unique, thick, curved root tubers.

Infundibular teeth are of normal size but exhibit inward invaginations in the crown, resembling a funnel.
Molariform teeth resemble molars or premolars with incomplete root formation.[4]

Delayed eruption of a permanent tooth by more than six months and dental malpositioning can often be the initial clinical indicators of a supernumerary tooth. The presence of a supernumerary tooth is the primary reason for the failure of maxillary incisor eruption. Research suggests that the tuberculate type of mesiodens, due to its predominantly palatal position relative to the maxillary incisors, is more prone to causing delayed eruption.

Complications associated with mesiodens

The presence of a mesiodens can lead to various complications, including crowding, spacing issues, impaction of permanent incisors, abnormal root development, alteration of the path of permanent incisor eruption, rotation, intraoral infections, cystic lesions, delayed eruption, and even incisor eruption into the nasal cavity.[6]

In cases of dental misalignment in the incisal region, investigation for the presence of a mesiodens is warranted, with torsion and lip movement being the most common manifestations.

When a diastema is present, radiographic examination should be conducted to rule out the presence of a mesiodens. If confirmed, early removal during the patient's growth phase may resolve the interproximal space without necessitating orthodontic intervention.

The formation of cavities or root resorption due to a mesiodens can lead to various pulp pathologies.

The follicle surrounding an impacted tooth can give rise to dentigerous or follicular cysts in up to 6% of cases. These cysts may become infected, undergo histological changes, or even develop into ameloblastomas or intracystic carcinomas.

Another complication associated to mesiodens is ectopic eruption, which can even occur within the nasal cavity. Alongside clinical examination, radiographic interpretation aids clinicians in determining the mesiodens' location. Clinically, a white mass may be observed in the nasal region, while radiographically it presents as a tooth-like radiopacity. [6]

According to Seddon et al. [7] found that in 28% to 63% of cases, the presence of extra teeth could result in displacement or rotation of adjacent teeth, and in 26–52% of cases, delayed eruption.

Management of mesiodens

Inverted teeth have the potential to migrate, emphasizing the importance of extracting invested mesiodens to prevent cyst formation. Early removal of tuberous forms is crucial to facilitate timely eruption of the central incisors, which is more commonly delayed compared to conical incisor eruption. However, if a conical mesiodens does not cause malposition, central incisor crowding, or other issues, it can be left in place as long as it is positioned above and away from the erupted teeth.

Two considerations guide the timing of mesiodens extraction[8]:

Early Tooth Extraction: Extraction before the age of 6 is undertaken to prevent future orthodontic issues and the need for complicated surgical interventions. This early intervention typically yields a more favourable prognosis compared to delayed extraction. However, drawbacks include the risk of damaging the roots of permanent incisors, potential psychological challenges for the child undergoing surgery, and the possibility that the procedure may ultimately be unnecessary, as sometimes the mesiodens may erupt without adversely affecting the permanent teeth.

Late Tooth Extraction: Extraction typically occurs between 8 to 10 years of age, once complete root formation of permanent incisors has taken place. At this stage, the risk of damaging the apex of permanent teeth is reduced compared to early extraction. Additionally, children are better equipped to cope with surgery at this age. As advocated by authors such as **Koch et al(1986)**[9]., late extraction is preferred, especially in cases where supernumerary teeth are only symptomatic early on. However, a drawback of late extraction is the heightened risk of space inadequacy, which may necessitate more aggressive and complex orthodontic and surgical interventions.[8]

Conclusion

Mesiodens, the most common type of supernumerary teeth in permanent dentition, is not uncommon. Research suggests that a combination of genetic predisposition and environmental factors may stimulate the dental lamina, resulting in the formation of additional teeth. Early extraction of mesiodens during the mixed dentition phase facilitates the natural alignment of adjacent teeth; however, asymptomatic cases may be left untreated, with regular check-ups .

References

1. Anthonappa RP, King NM, Rabie AB. Aetiology of supernumerary teeth: a literature review. Eur Arch Paediatr Dent. 2013;14(5):279-88.
2. Qamara CR, Bajwab JI, Rahbarc MI. Mesiodens - etiology, prevalence, diagnosis and management.POJ 2013;5(2):73-76.
3. Mufeed A, Hafiz A, Ashir K.R ,Ahmed A,Reshma V.J. Clinical consequence of mesiodens – A case series,Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology.2016;28(3):259-262.
4. Stellzig A, Basdra EK, Komposch G. Mesiodentes: incidence, morphology, etiology. J Orofac Orthop.1997;58(3):144–53.
5. Fleming PS, Xavier GM, DiBiase AT, Cobourne MT. Revisiting the supernumerary: the epidemiological and molecular basis of extra teeth. *Br Dent J* 2010; 208:25-30.
6. Meighani G, PakdamanA. Diagnosis and management of supernumerary (mesiodens): a review of the literature. J Dent (Tehran Univ Med Sci) 2010;7: 41–9.
7. Seddon RP, Johnstone SC, Smith PB. Mesiodentes in twins: a case report and a review of the literature. Int J Paediatr Dent. 1997;7(3):177–84.
8. Penalva PM, Martinez C, Fernandez MP, Val JE, Calvo JL.Mesiodens: Etiology, Diagnosis and Treatment: A Literature Review. BAOJ Dentistry 2015;1: 002.
9. Koch H, Schwarts O, Klausen.Indications for surgical removal of supernumerary teeth in the premaxilla. Int J Oral Maxillofac Surg 1986; 15:273-281.