Morphological Variation in Clinically Erupted Mesiodens: A Case Series

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ABSTRACT

Mesiodens are the most common supernumerary teeth, commonly located in anterior maxilla, placed labially, palatally or in between the maxillary central incisors with a higher prevalence in males. This case series depicts clinically visible mesiodens in young children with morphological variables (eumorphic or dysmorphic), which were managed by extraction under local anesthesia.

Keywords: *Extraction, mesiodens, supernumerary teeth.*

INTRODUCTION

The term mesiodens was devised by Bolk (1917) to denote supernumerary tooth situated between maxillary central incisors.[1] Mesiodens is classified into Type I Eumorphic (similar to a normal-sized central incisor) and Type II Dysmorphic (conical, tuberculate, supplemental and molariform). Even though mesiodens is highly prevalent, etiology has not been defined. Some of the proposed theories include hyperactivity of dental lamina, dichotomy of tooth bud, and a combination of environmental and genetic factors.[2] It can occur as single, multiple, unilateral, or bilateral forms and in association with syndromes like Gardner's syndrome, Down syndrome, or Cleidocranial Dysplasia.[3] Mesiodens may give rise to a variety of complications such as delayed eruption, the ectopic eruption of adjacent teeth, midline diastema, impaction, malalignment of incisors, radicular resorption, crowding, dilacerations, dentigerous cyst and migration into the nasal cavity or maxillary sinus.[4]

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CASE SERIES

CASE 1

A 9-year-old male child reported to the Department of Pedodontics and Preventive Dentistry, Kantipur Dental College, Kathmandu with the chief complaint of an extra tooth in the upper front teeth region of the jaw since 1.5 years. Intraoral examination revealed a mixed dentition period with presence of a palatally erupted incisor-like supernumerary tooth with respect to 11(Figure 1). An Orthomopatogram (OPG) was performed to rule out the possibility of multiple supernumerary teeth and extension of root of supernumerary teeth. The radiograph and clinical picture confirmed the presence of single mesiodens with short root and permanent central incisors in Nolla's stage 9 (Figure 2). Thus, the extraction of mesiodens was planned and performed under local anesthesia (2% lignocaine with adrenaline).

Mesiodens morphologically was Type II dysmorphic, supplemental subtype with short, straight, closed apex root.

Figure 1. Palatally erupted mesiodens – Type II dysmorphic, supplemental subtype.

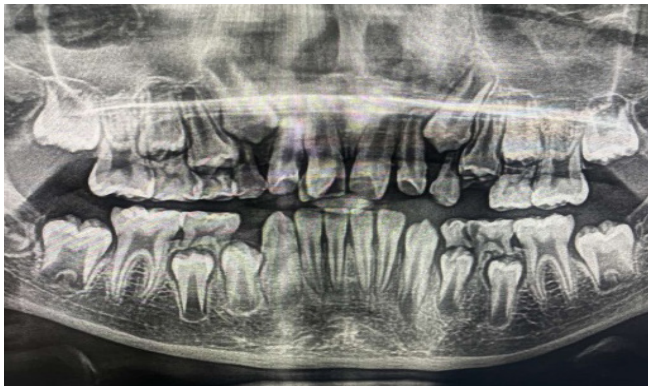

Figure 2. OPG depicts presence of mesiodens

Figure 3. Socket after mesiodens extraction

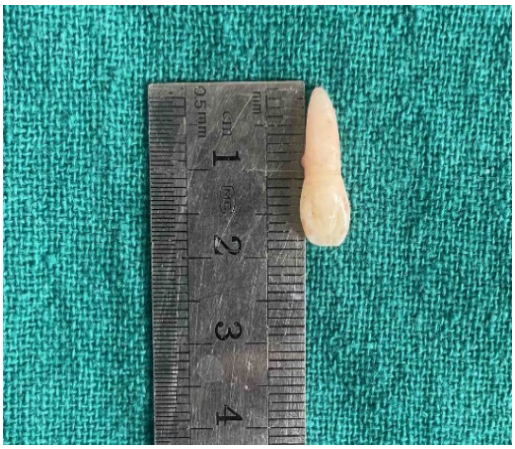

Figure 4. Extracted mesiodens 2cm

CASE 2

A 9-year-old male child presented with the chief complaint of an irregularly placed tooth on the upper front teeth region of the jaw since 1.5 years. An erupted incisor-like tooth with a talon cusp between 11 and 22 that displaced tooth 21 labially was discovered during intraoral examination (Figures 1). An intraoral periapical radiograph (IOPA) (Figure 2) revealed the presence of a single conical mesiodens with talon cusp. The permanent central incisors was in Nollas stage 9. Thus, extraction of erupted mesiodens was planned and performed under local anesthesia followed by orthodontic intervention on later days for 21.

Mesiodens was Type II dysmorphic, supplemental subtype with talon cusp and slightly curved, almost closed root apex (Figure 3).

Figure1. Labial and occlusal view depicts the presence of erupted mesiodens between 11 and 22 – Type II dysmorphic, supplemental subtype with talon cusp.

Figure 2. Periapical radiograph-single mesiodens

Figure 3. Extracted mesiodens with fractured segments of talon cusp

CASE 3

A 6-year-old male child reported with the chief complaint of the presence of new teeth in the anterior teeth region for 1 year. Upon intraoral investigation, patient was in his deciduous dentition period along with that there was clinically visible, rotated incisor-like mesiodens palatal to 51 and molar-like mesiodens palatal to 61 (Figure 1). The IOPA revealed a pair of supernumerary teeth with short roots i.r.t 51, 61(Figure: 2). Since the deciduous teeth were carious, dispaced labially and also on the verge of exfoliation, supernumerary teeth, as well as the deciduous central incisors were planned for extraction along with regular follow-up for unerupted permanent teeth. Thus, the extraction of mesiodens and deciduous teeth was carried out under local anesthesia.

Mesiodens was Type II dysmorphic molariform subtype with respect to 61 and supplemental subtype with respect to 51 with a short, straight, open root apex.

Figure 1. Occlusal view depicts Type-II dysmorphic molariform subtype mesiodens palatally w.r.t. 51,61

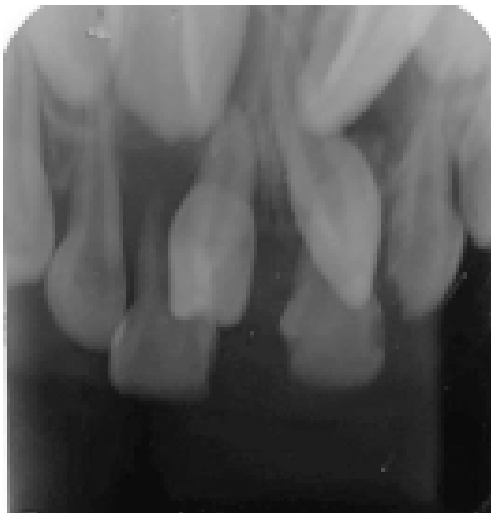

Figure 2. Periapical radiograph showing palatally erupted two supernumerary teeth and periapical radilucency i.r.t 51, 61

Figure 3. Socket after extraction of 51, 61 along with mesiodens

Figure 4. Extracted deciduous and supernumerary teeth

CASE 4

A 13-year-old male child presented with the chief complaint of an irregularly placed tooth in the upper front region for one year. The intraoral examination showed palatally placed, conical-shaped clinically visible mesiodens with respect to 11 displacing it labially (Figure 1). A periapical radiograph showed the presence of a mesiodens with curved root and an impacted supernumerary tooth near root apex of 21. Further, for better visualization of impacted tooth, size, location, and extent of the impacted supernumerary tooth, Cone Beam Computed Tomography (CBCT) was performed. A palatally located inverted supernumerary tooth with close proximity to root apex of 21 near nasal floor and mesiodens i.r.t 11 were confirmed by CBCT (Figure 2). There was no root resorption of permanent teeth seen in this region. Therefore, it was decided to have both supernumerary teeth extracted under general anesthesia, followed by orthodontic treatment. Due to the patient's anxiety and current refusal to undertake any surgical procedure, extraction of erupted mesiodens was planned and carried out with regular monitoring for the impacted tooth.

Mesiodens was Type II dysmorphic, conical subtype with elongated, curved and closed root apex.

Figure1. Labial and occulusal view displays presence of Type- II dysmorphic, conical subtype mesiodens i.r.t 12 and 21 displacing 11 labially

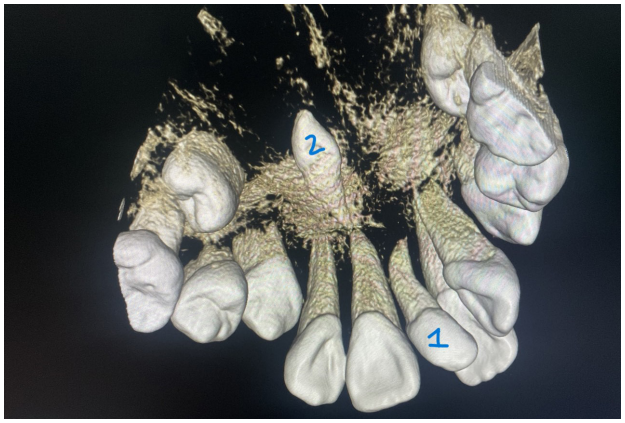

Figure 2. CBCT depicts the presence of two supernumerary teeth; 1 - located between 11 and 21, 2 - Impacted supernumerary teeth in an inverted position with root apex near 21 and crown near the nasal floor

Figure 3. Socket after extraction of mesiodens

Figure 4. Extracted mesiodens shows the curved root

CASE 5

A 7-year-old female child reported with the chief complaint of an unerupted tooth in upper front right teeth region of the jaw. Upon intraoral investigation, conical mesiodens with an unerupted 21 was discovered (Figure 1). A periapical radiograph showed the presence of single mesiodens with short root i.r.t. 21 and permanent incisors in Nollas stage 8 (Figure 2). Thus, extraction of mesiodens was planned and performed with regular follow up for unerupted 21.

Mesiodens was Type II dysmorphic with a conical subtype with a short, slightly curved, open root apex.

Figure 1. Intraorally picture - Type II dysmorphic, conical subtype mesiodens

Figure 2. OPG reveals single mesiodens

Figure 3. Socket after mesiodens extraction

Figure 4. Conical-shaped extracted mesiodens

DISCUSSION

The presence of supernumerary tooth in the central position of the upper or lower jaw is called mesiodens. Mesiodens is considered to be the most common dental anomaly affecting permanent dentition and is rarely found in primary dentition.[5] The prevalence of mesiodens in the general population of 0.15-1.9%, with a higher frequency in males than females.[6]

Mesiodens are discovered as a result of patient's complaint for malocclusion, bony swelling or routine radiograph.[3] They can delay or prevent eruption of central incisors in 26% to 52% of cases as in case 5; cause displacement, ectopic eruption or rotation of incisors in 28% to 63% of cases; and labially displace incisors in 82% of cases as seen in Case 2 and 4.[7] A radiographic examination is critical for correct diagnosis and treatment planning. Various radiographic techniques should be implemented for a precise view of mesiodens.[3]

Mesiodens vary in size and form in crown as well as in the root. They can mimic the way of normal teeth (eumorphic) or have unusual morphology (heteromorphic). Crown morphology vary from conical, supplemental, tuberculated and molarified. Root morphology may vary from short, elongated, straight or dilacerated. According to study conducted by Adhikari S et al most common type was conical (78.18%), followed by supplemental form (16.36%), least common type was tuberculated form (5.45%) in Nepalese population.[8] Study conducted by Limbu S et al showed morphologically, conical shape was the most common type 86.8%, 11.3% were trabeculate and 1.9% was supplemental, 13.2% showed crown formation only, 32.1% showed partial root formation and 54.7% fully formed teeth.[9]

Treatment of impacted mesiodens centers on several factors which include the age of the child, clinical manifestation, capacity of the child to tolerate the surgical procedure, root development stage of the adjacent permanent teeth, etc. There is two different school of thoughts regarding extraction of mesiodens; early extraction before root formation of the permanent incisors and late extraction after root formation of the permanent incisors. To promote eruption and proper alignment of adjacent teeth, it is recommended to extract mesiodens in the early mixed dentition.[10] Henry and Post recommended delaying the extraction of the mesiodens about the age of 10 when the apex of the central incisor nearly forms.[11] Shih WY et al study showed significantly fewer dental complications when patients were aged <6 years old and were before Stage 8 of Nolla's classification of dental development.[12] Management is discussed according to the developmental stage of the dentition: primary, mixed, or permanent.[7] Extraction of supplementary mesiodens in the primary dentition is usually not recommended because supernumerary primary teeth often erupt into the oral cavity and surgical extraction of unerupted teeth may increase the risk of displacing or damaging the developing permanent incisors.[13] However, extraction during the early mixed dentition stage allows normal eruptive forces to promote spontaneous eruption of the permanent central incisors after the extraction.[14] This intervention gives an

advantage to the spontaneous eruptive potential of the permanent incisor, to avoid eruption delay or failure of their eruption, crowding, space loss, and midline shift. The later the extraction of the mesiodens, the greater the chance that the permanent tooth either will not erupt spontaneously or will be misaligned when it does erupt.[15] In these above cases, the mesiodens were clinically visible causing malalignment of teeth, delayed eruption of permanent teeth, irritation, and difficulty to the patient. Due to these ongoing and future complications, the mesiodens were indicated for extraction in all cases under local anesthesia as emphasized by Yague -Garcia et al.[16] Surgical intervention was delayed in case 4 as the patient was apprehensive.

CONCLUSIONS

A mesiodens is the most frequent supernumerary tooth present in the premaxilla which can vary in number, morphology, size, location, position, distribution, and pattern of presentation. The preferred course of therapy for erupted mesiodens is early removal following careful imaging analysis. However, unerupted teeth need to be managed depending upon its type, site and position of tooth whether to go for immediate extraction or to be left in situ with periodic follow- up with radiographs for following eruption, pathological lesions or risk of damage to the vitality of the surrounding adjacent teeth.

Conflict of Interest: None

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