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# MAJESTIC MESIODENS: A COLLECTIVE REPORT OF 4 CASES AND THEIR MANAGEMENT BY SURGICAL INTERVENTION

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**ABSTRACT**

Mesiodentes are the most common supernumerary teeth, located in the anterior maxilla, placed palatally, labially or in between the maxillary central incisors. They usually results in oral problems such as malocclusion caused by delayed or ectopic eruption of permanent incisors affecting occlusion and appearance, food impaction, poor aesthetics and cyst formation. Diagnosis of mesiodens early in development allows for optimal yet minimal treatment which would help in reducing eruption disturbances and position of the adjacent permanent incisors.

**Key words:** Supernumerary, Mesiodens, Ectopic eruption, Surgical removal.

## INTRODUCTION

Supernumerary teeth are extra teeth in comparison to normal dentition (Alberti et al., 2006) They may be present in both the permanent and the primary dentitions but are 5 times less frequent in the primary dentition (Grahnen, 1961). They are more common in the central region of the upper arch; however, their occurrence in the mandible is rare. The most common type of supernumerary tooth as indicated by Alberti et al is mesiodens. (Alberti et al., 2006) The term mesiodens was coined by Bolk (1917) (Gorlin and Goldman, 1990). The overall prevalence of mesiodentes is between 0.15% and 1.9% (Primosch, 1981) The presence of a mesiodens should be suspected if there is delayed eruption of the permanent incisors or if the central incisors are displaced, malposed or exhibit spacing. (Sedano and Gorlin, 1969) Problems associated with mesiodens comprises of delayed eruption of permanent teeth, abnormal crowding and spacing, root resorption of adjacent teeth, dentigerous cyst formation etc.( Tay et al., 1984)

**Case Report**

## DISCUSSION

**INCIDENSE AND PREVALENCE:** Mesiodens is a supernumerary tooth present in the midline between the two central incisors. Its incidence is estimated to be between 46 & 67 % of all supernumerary teeth7.

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The overall prevalence of mesiodens is between 0.15% to 1.9% (Primosch, 1981; Sedano and Gorlin, 1969)

**CLASSIFICATION:** According to their presence in the permanent dentition they are named as rudimentary mesiodentes which exhibit abnormal shape and are in smaller size and in primary dentition as supplementary mesiodentes which resemble natural teeth in both size & shape (Sedano and Gorlin, 1969; Sharma, 2003) According to the morphology two subclasses are considered; eumorphic and dysmorphic. The eumorphic subclass is usually similar to a normal-sized central incisor, whereas the dysmorphic teeth have different shapes and sizes and are categorized into conical, tuberculate,supplemental and odontomes (Russell and Magdalena, 2003).

**ERUPTION STATUS:** Most mesiodens are discovered during the first ten years of life .10 Mesiodens can occur individually or as multiples (mesiodentes) and often do not erupt5. According to Asaumi JI et al the number of supernumerary teeth was one in 146 cases (73%), two in 52 cases (26%) and three in 2 cases (1%) (Von Arx, 1992). Of the 85 mesiodens reported by Gunduz et al, 67 were fully impacted, six were partially erupted & 12 were fully erupted. (Asaumi et al., 2004)

**THEORIES:** The literature reports three theories regarding etiopathogenesis of mesiodens but the subject remains controversial (Sedano and Gorlin, 1969; Sharma, 2003)

1) **Phylogenetic reversion (atavism)** It stated that the mesiodens represented a phylogenetic relic of the extinct ancestors who had three central incisors (Sharma, 2003; Van Buggenhout and Bailleul-Forestier, 2008).

**Table 1. Clinical and radiographic details of 7 mesiodens found in 4 cases**

| S No | Age/ Sex | Clinical Presentation | Radiographic Presentation | Treatment |
|---|---|---|---|---|
| 01. | 9/M | Clinically solitary mesiodens in midline with diastema.<br>Palatal displacement and rotation of 21 | Radiographically, Impacted mesiodens superimposed on the roots of 11 | Nasopalatine nerve block along with bilateral palatal infiltration administered. Using surgical blade no. 15 crevicular incision was given. Palatal flap was raised and impacted mesiodens was removed. After removal interrupted sutures were placed to reposition the flap. |
| 02. | 10/M | Clinically, rotated mesiodens in incisive papilla region .<br>Mesially inclined and palatally displaced 21.<br>Both lateral incisors were in crossbite | Radiographically, impacted, inverted mesiodens in between the roots of 11 and erupted mesiodens | Nasopalatine nerve block along with bilateral palatal infiltration administered. Using surgical blade no. 15 crevicular incision was given. Palatal flap was raised and impacted mesiodens was removed. After removal interrupted sutures were placed to reposition the flap |
| 03. | 8/M | Clinically, rotated mesiodens in anterior region of upper arch.<br>Unerupted 11 and 21 with prominent bulge in that area | Radiographically, one inclined mesiodens superimposed on the apical third of the root of the erupted mesiodens | Nasopalatine nerve block along with bilateral palatal infiltration administered. Incision was given in the anterior region. Flap was raised and impacted mesiodens was removed and interrupted sutures were placed in that region. |
| 04. | 14/M | Clinically, a prominent bulge in the midline above labial frenum.<br>Spacing present in the anterior region | Radiographically, an inverted mesiodens present in between the roots of central incisors | Bilateral infraorbital nerve block was administered An incision was given above the frenal attachment using surgical blade no 15 Labial flap was raised and inverted mesiodens was removed from that region using periosteal elevator after that interrupted sutures were placed to reposition the flap |

**Table 2. Summary of the particulars of 7 mesiodens found in 4 cases**

| S No. | Particulars | | |
|---|---|---|---|
| 01. | Age range of patients | 7-13 years | |
| 02 | Gender distribution | All 4 patients were males | |
| 03 | Eruption status of mesiodens | Erupted<br>Impacted -1<br>Combination<br>( Erupted and Impacted) – 3 | |
| 04. | Number of mesiodens in patients | Single – 1 case<br>Double – 3 cases | |
| 05 | Position of mesiodens in relation to central incisors | Erupted<br>Case 1: 1 in midline between 2 central incisors<br>Case 2: 1 rotated mesiodens in incisive papilla region .<br>Case 3: 1 rotated mesiodens in anterior region of upper arch.<br>Case 4 : | Impacted<br>1 impacted mesiodens superimposed on the roots of 11<br>1 impacted, inverted mesiodens in between the roots of 11 and erupted mesiodens<br>One obliquely placed mesiodens superimposed on the apical third of the root of the erupted mesiodens<br>1 impacted inverted mesiodens<br>in between the roots of two central incisors |
| 06. | Orientation of mesiodens | ERUPTED<br>Case 1 : Vertical<br>Case 2 : Vertical<br>Case 3 : Vertical<br>CASE 4 : - | IMPACTED<br>Vertical<br>Inverted<br>Oblique<br>Inverted |
| 07. | Crown morphology of mesiodens | All 3 patients had Dysmorphic mesiodens<br>Case 1 : Conical<br>Case 2 : Conical<br>Case 3 : Conical<br>CASE 4 : - | Conical<br>Tuberculate<br>Conical<br>Conical |
| 08. | Root morphology of mesiodens | Case 1 : Straight<br>Case 2 : Straight<br>Case 3 : Straight<br>Case 4 : - | Straight<br>Curved<br>Straight<br>Dilacerated |

**2) Dichotomy** suggests that the tooth bud splits to create two teeth, one of which is the mesiodens (Primosch, 1981; Sharma, 2003).

3) According to the third theory which is most widely supported, remnants of the dental lamina or palatal offshoots of active dental lamina are induced to develop into an extra tooth bud which results in a supernumerary tooth (Sedano and Gorlin, 1969; Sharma, 2003).

**LOCATION**: Von Arx reported that majority of supernumerary teeth lay palatal to the central incisors10. Asaumi JI et al. evaluated 147 mesiodens by axial radiography

and found that 89% were located palatally against the dental arch, 11% overlapped the dental arch and none were placed labially (Von Arx, 1992). Asaumi et al. (Von Arx, 1992) and Roy chaudhury et al13 observed inverted impacted mesiodens in 67% and 62.5% of their cases respectively.

**Fig. 1. Frontal view showing solitary mesiodence with diastema**

**Fig. 2. IOPA showing one erupted and one impacted mesiodence superimposed on the roots of 11**

**Fig. 3. Crevicular incision given and palatal flap raised**

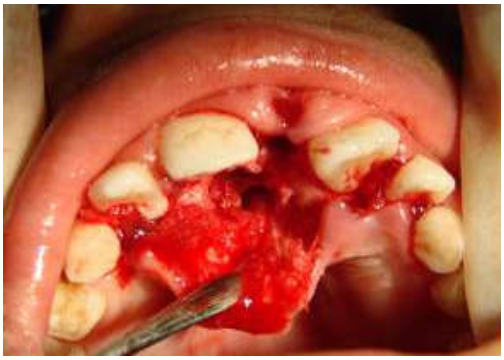

**Fig. 4. After removal of both mesiodens**

**Fig. 5. Extracted mesiodentes**

**Fig. 6. After suture placement**

**Fig. 7. Post extraction IOPA**

**Fig. 8. Post healing maxillary arch view**

Fig. 9. Post healing frontal view

**Case No: 02**

Fig. 10. Frontal view showing maxillary laterals in crossbite

Fig. 11. Rotated mesiodens in incisive papilla region

Fig. 12. One inclined mesiodens superimposed on the apical third of the root of the erupted mesiodens

Fig. 13. Palatal flap raised and mesiodentes removed

Fig. 14. Extracted mesiodentes

Fig. 15. Post healing

**Case No: 03**

Fig.16. A rotated mesiodens in anterior region of upper arch

**Fig. 17. An inclined mesiodens superimposed on the apical third of the root of the erupted mesiodens**

**Fig. 18. Labial surgical approach exposing both central incisors and impacted mesiodens**

**Fig. 19. After removal of mesiodens**

**Fig. 20. Extracted mesiodentes**

**Fig. 21. After suture placement**

## Case No: 04

**Fig. 22. OPG showing an inverted mesiodens present in between the roots of central incisors**

**Fig. 23. Labial surgical approach over the bulge to remove the mesiodens**

**Fig. 24. After removal of inverted mesiodens**

**Fig. 25. Extracted mesiodens with dilacerated root**

**TIMING OF REMOVAL:** Management of supernumerary teeth depends on the type and position of the tooth. Immediate removal of mesiodens is usually indicated in the situations such as inhibition or delayed eruption, displacement of the adjacent tooth, interference with orthodontic appliances etc (Tyrologou et al., 2005). There are two methods for extraction of mesiodens; early extraction before root formation of the permanent incisors and late extraction after root formation of the permanent incisors15. Extraction of mesiodens in the primary dentition is usually not recommended because surgical extraction of unerupted teeth may increase the risk of damaging the developing permanent incisors16. However, extraction of mesiodens during the early mixed dentition stage allows normal eruptive forces to promote spontaneous eruption of the permanent central incisors. (Tay et al., 1984)

Delayed treatment involves extraction of the mesiodens when the unerupted central incisor's apex is almost mature, usually around 10 years of age (Di Biase, 1971). The later the extraction of the mesiodens, the greater the chance that the permanent tooth either will not spontaneously erupt or will be malaligned when it does erupt (Meighani and Pakdaman, 2010). Also, space loss and a midline shift of the central incisors may have already occurred by this age. (Hattab et al., 1994) Thus, a significant delay in treatment can create the need for more complex surgical and orthodontic management. Approximately 6 months after extraction of a mesiodens, clinical and radiographic reassessment is recommended to determine if the tooth has erupted (Meighani and Pakdaman, 2010).

**Conclusion**

The mesiodens is a fairly common dental anomaly that a dental practitioner chances upon. Because of its high prevalence, the general dentist should be knowledgeable about the signs and symptoms of mesiodentes and appropriate treatment. Extraction of the mesiodens in the early mixed dentition stage may facilitate spontaneous eruption and alignment of incisors, while minimizing intervention, space loss and midline shift. Should the incisors not erupt spontaneously, further surgical and orthodontic treatment may be required.

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