Rare disease

Nonsyndromic double mesiodentes- hidden lambs among normal flock!

Harshkant P Gharote,¹ Preeti P Nair,¹ Shaji Thomas,² Guru Prasad R,¹ Shikha Singh¹¹Department of Oral Medicine and Radiology, People's College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, India;²Department of Oral and Maxillofacial Surgery, People's College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, India**Correspondence to** Professor Preeti P Nair, shajihoss@gmail.com**Summary**

Mesiodens, a common supernumerary tooth, is found in the midline in anterior maxilla between the incisors. Its occurrence as multiples is termed as 'mesiodentes'. Double mesiodentes, a rare phenomenon, is seldom reported in literature and show a plethora of manifestations as described in the case report. They may not be apparent clinically, necessitating the use of imaging modalities and require careful evaluation to prevent complications. This paper presents a report of six double mesiodentes cases with negative family history for supernumerary teeth and absence of any syndromes. This is an effort to educate dentists about signs, symptoms, complications and management of mesiodentes.

BACKGROUND

The term mesiodens refers to a supernumerary tooth present in the midline of the maxilla between the two central incisors. Mesiodens can occur singly or in multiples, and may be responsible for disturbances in the eruption of maxillary incisor teeth.¹ Cases involving one or two supernumerary teeth most commonly involve the anterior maxilla, followed by the mandibular premolar region.² The occurrence of multiple supernumerary teeth without any associated systemic conditions or syndromes, however, is a rare phenomenon.³

The prevalence of hyperdontia is reportedly between 0.15% and 3.9%. Extra teeth may present in both the permanent and the primary dentitions but is five times less frequent in the primary dentition. The overall prevalence of mesiodentes is between 0.15% and 1.9%. Mesiodens can occur individually or as multiples (mesiodentes), may appear unilaterally or bilaterally, and often do not erupt. Mesiodentes can significantly alter both occlusion and appearance by altering the eruption path and the position of the permanent incisors.⁴

This paper presents a report of six double mesiodentes cases with negative family history for supernumerary teeth and absence of any syndromes. This is an effort to educate dentists about signs, symptoms, complications and management of mesiodentes.

CASE PRESENTATION

A series of six males with double supernumerary teeth is presented. Clinical examination of case 1 (aged-24 years) revealed crowding in upper anterior region along with double tuberculate supernumerary teeth erupted palatally. The left mesiodens and right lateral incisor had Ellis class III and II fractures, respectively (figure 1).

Case 2 (aged-10 years) reported with traumatic injury to the upper anterior teeth and swelling. The occlusal radiograph revealed two impacted mesiodentes of which one was conical. The other one was of tuberculate variety and

inverted (figure 2). A large well defined radiolucency was associated with 21 and 22 suggestive of radicular cyst.

Case 3 (aged – 12 years) complained of crowding in upper dentition with three supernumerary teeth. One conical supernumerary tooth was present labially, between 11 and 21, while a palatal mesiodens was of tuberculate variety (figure 3a,b). The third mesiodens was fused with 11, presenting as a large tooth with increased mesiodistal width, three labial grooves running cervicoincisally and a prominent lingual fossa (figure 3c).

Case 4 (aged – 26 years) revealed a supplemental supernumerary tooth palatal to 11. Conical mesiodens was present in the midline causing labial displacement of 21 (figure 4).

Case 5 (aged- 20 years) complained of irritation to the tongue due to supernumerary tooth in the rugae region (figure 5a). In addition, an impacted, inverted mesiodens was visible on occlusal radiograph overlapping the root of 21 (figure 5b).

In case 6 (aged – 20 years) the upper central incisors were fractured (Ellis class II) and discoloured (figure 6a). Impacted supernumerary teeth were coincidental findings found on occlusal radiograph. Both impacted mesiodentes were of conical variety, placed palatally of which the right one was inverted. The central incisors had been treated endodontically (figure 6b).

TREATMENT

Surgical removal was performed for all mesiodentes with uneventful healing. Since the patients' main complaints were usually other dental problems, these complaints were also addressed.

DISCUSSION

Supernumerary teeth may be encountered by the dental practitioner as a chance finding on a radiograph presenting as an impacted tooth. The most common supernumerary tooth which appears in the maxillary midline is called a

Figure 1 Double tuberculate mesiodentes erupted palatal to 11, 21 with fractured left mesiodens (black arrow).

Figure 2 Occlusal radiograph showing impacted conical (white arrow) and tuberculate (black arrow) mesiodentes and radicular cyst with 21, 22.

mesiodens.⁵ However, very little literature is available on cases of double supernumerary teeth as they do not occur frequently.

The aetiology of supernumerary teeth is not known. The literature reports three theories concerning the cause of mesiodentes but this subject remains controversial. It was originally postulated that mesiodentes represented a phylogenetic relic of extinct ancestors who had three central incisors known as phylogenetic reversion (atavism).⁴ A second theory known as dichotomy suggests that the tooth bud is split to create two teeth, one of which is the mesiodens. Supporters of this theory believe that dichotomy represents complete gemination, which also occurs

frequently in the anterior maxilla.^{4 7} The third theory, involving hyperactivity of the dental lamina, is the most widely supported. According to this theory, 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. Thus, the localised and independent hyperactivity of the dental lamina is the most accepted cause for the development of supernumerary teeth.^{3 4}

The observation that supernumerary teeth are more common in family members suggests heredity as an aetiological factor; however, it does not follow a simple Mendelian pattern. It has been suggested that environmental factors

Figure 3 (a) Conical mesiodens between 11 and 21 and tuberculate one palatally, third mesiodens fused with right central incisor (black arrow). (b) Occlusal radiograph showing mesiodentes- conical (white arrow) and tuberculate (black arrow). (c) Maxillary cast showing large central incisor due to fusion with third mesiodens (black arrow).

Figure 4 Palatally erupted supplemental (black arrow) and conical (white arrow) mesiodentes.

might have influence on genetic susceptibility^{2 8} which could probably be a cause for negative family history in our case series.

In the present report all six patients were males. This suggests that males are predominantly affected by mesiodentes

as discussed by Asaumi *et al* (M: F=2.8:1)⁹. Roychoudhury *et al*¹⁰ in their retrospective study of 30 cases of mesiodentes found male preponderance of 1.5:1.

Supernumerary teeth are classified according to their morphology and location. In the permanent dentition,

Figure 5 (a) Ectopic conical mesiodens erupted palatally distal to incisive papilla (black arrow). (b) Occlusal radiograph revealed impacted inverted mesiodens overlapping root of 21 (black arrow).

Figure 6 (a) Fractured, discoloured 11 and 21 (black arrows). (b) Maxillary occlusal radiograph showing impacted double mesiodentes, inverted one overlapping 11 (black arrow).

there are four different morphological types: conical, tuberculate, supplemental and odontoma.^{11 12} Case 1 presented with both mesiodentes as tuberculate type, while in cases 4, 5 and 6 both were of conical variety. In case 3 both mesiodentes were supplemental but case 2 was unique in morphology as one mesiodens was tuberculate and other one conical.

In some subjects, mesiodens erupt normally, but usually they remain impacted or erupt in an inverted position. It is also probable that these teeth follow an abnormal path of eruption or even take an ectopic position. It is less probable for mesiodens to erupt if it occurs in multiples. In one fourth of the cases, mesiodentes do spontaneously erupt into the oral cavity. They may interfere with eruption of the other permanent teeth causing malocclusion when unerupted.⁸ The findings of cases 5 and 6 show presence of one inverted, impacted mesiodens (figures 5b and 6b). In cases 2 and 6 both mesiodentes were impacted while in cases 1, 3 and 4 they were erupted. One mesiodens was erupted and the other impacted, as in case 5. With regard to position of teeth, simultaneous occurrence of impacted supernumerary teeth one in inverted and another in vertical direction (as in case 6) is not mentioned in literature.

Occasionally, supernumerary teeth are not associated with any adverse effects and may be detected as a chance finding during radiographic examination.⁵ In the present report, two cases (2, 6) showed mesiodentes as coincidental finding in occlusal radiographs. Asaumi *et al* evaluated 147 mesiodentes by axial radiography, of which 131 were located palatally against dental arch and 16 overlapped the dental arch.⁹ In our observation, all impacted and erupted mesiodentes were located palatally except in case 3 where one erupted mesiodens was overlapping the dental arch.

Early diagnosis is important to minimise the risk of complications resulting from supernumerary teeth. Mesiodentes are capable of causing a variety of complications like interference with eruption and alignment of the adjacent teeth, delayed or non-eruption of maxillary incisors, radicular resorption and dentigerous cyst formation.^{13 14} All cases in the present series showed malalignment except case 5 in which one mesiodens had erupted palatal to the incisive papilla. Traumatic injury to the anterior teeth in cases 1, 2 and 6 could be attributed to proclination caused due to mesiodentes. Thus occurrence of double mesiodentes could be regarded as a risk factor to the crowding in the anterior maxilla.

Mesiodentes are frequently associated with various craniofacial anomalies, including cleft lip and palate, cleidocranial dysplasia, Crouzan syndrome, Ehler Danlos syndrome, Gardner syndrome and many more. However it is rare to find multiple supernumeraries in individuals with no other associated disease or syndrome.^{4 15} In all reported cases of our series, none of the patients were affected by any syndrome.

An additional anomaly was observed in case 3 in the form a fused supernumerary tooth with right central incisor. The 'two tooth rule' may be helpful in differentiating fusion from gemination. If the resulting dental structure is counted as two teeth and the normal numbers of teeth are present in the region, the case probably represents an example of fusion. If, however, the abnormal dental structure is counted as two teeth and if an extra tooth is present in the region, then the case may represent an example of gemination between a normal and a supernumerary tooth.¹⁶ As no permanent tooth was missing, it was concluded to be the third mesiodens.

Extraction of mesiodens is not mandatory in situations where there is a possibility of spontaneous eruption

without complications. However, surgical intervention should be considered to prevent unwanted sequelae if there are signs of complications, such as cystic changes, root resorption, or eruption disturbance of adjacent teeth.¹⁷ We encountered complications like proclination of teeth and irritation to the tongue. All the cases were treated by surgical removal of mesiodentes and individuals in need of other treatment were managed subsequently.

Learning points

- ▶ Double mesiodentes can present with a plethora of dental complications which need to be evaluated carefully.
- ▶ In the presence of a single mesiodens, radiographic evaluation is mandatory to rule out impacted supernumeraries.
- ▶ Absence of any syndrome does not rule out presence of multiple supernumeraries and this warrants usage of more than one radiograph for a comprehensive evaluation.
- ▶ Familiarisation with types of supernumeraries can aid in better diagnosis and management.
- ▶ Developmental anomalies in number of teeth can occur along with morphology, sometimes causing them; supernumerary fused with a normal tooth leading to macrodontia.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Gündüz K**, Celenk P, Zengin Z, *et al*. Mesiodens: a radiographic study in children. *J Oral Sci* 2008;**50**:287–91.
2. **Scheiner MA**, Sampson WJ. Supernumerary teeth: a review of the literature and four case reports. *Aust Dent J* 1997;**42**:160–5.
3. **Orhan AI**, Ozer L, Orhan K. Familial occurrence of nonsyndromal multiple supernumerary teeth. A rare condition. *Angle Orthod* 2006;**76**:891–7.
4. **Russell KA**, Folwarczna MA. Mesiodens—diagnosis and management of a common supernumerary tooth. *J Can Dent Assoc* 2003;**69**:362–6.
5. **Garvey MT**, Barry HJ, Blake M. Supernumerary teeth—an overview of classification, diagnosis and management. *J Can Dent Assoc* 1999;**65**:612–6.
6. **Wang XP**, Fan J. Molecular genetics of supernumerary tooth formation. *Genesis* 2007;**49**:261–177. doi: 10.1002/dvg.20715.
7. **Fazliah SN**. Supernumerary tooth: report of a case. *AOS* 2007;**2**:54–8.
8. **Meighani G**, Pakdaman A. Diagnosis and management of supernumerary (mesiodens): a review of the literature. *JDT* 2010;**7**:41–9.
9. **Asaumi JI**, Shibata Y, Yanagi Y, *et al*. Radiographic examination of mesiodens and their associated complications. *Dentomaxillofac Radiol* 2004;**33**:125–7.
10. **Roychoudhury A**, Gupta Y, Parkash H. Mesiodens: a retrospective study of fifty teeth. *J Indian Soc Pedod Prev Dent* 2000;**18**:144–6.
11. **Schmuckli R**, Lipowsky C, Peltomäki T. Prevalence and morphology of supernumerary teeth in the population of a Swiss community. Short communication. *Schweiz Monatsschr Zahnmed* 2010;**120**:987–93.
12. **Shah A**, Gill DS, Tredwin C, *et al*. Diagnosis and management of supernumerary teeth. *Dent Update* 2008;**35**:510–20.
13. **Açikgöz A**, Açikgöz G, Tunga U, *et al*. Characteristics and prevalence of non-syndrome multiple supernumerary teeth: a retrospective study. *Dentomaxillofac Radiol* 2006;**35**:185–90.
14. **Mukhopadhyay S**. Mesiodens: a clinical and radiographic study in children. *J Indian Soc Pedod Prev Dent* 2011;**29**:34–8a.
15. **Batra P**, Duggal R, Parkash H. Non-syndromic multiple supernumerary teeth transmitted as an autosomal dominant trait. *J Oral Pathol Med* 2005;**34**:621–5.
16. **Gupta S**, Singla S, Marwah N, *et al*. Synodontia between permanent maxillary lateral incisor and a supernumerary tooth: surgical treatment perspective. *J Oral Health Comm Dent* 2007;**1**:52–5.
17. **Hyun HK**, Lee SJ, Ahn BD, *et al*. Nonsyndromic multiple mandibular supernumerary premolars. *J Oral Maxillofac Surg* 2008;**66**:1366–9.

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Gharote HP, Nair PP, Thomas S, R GP, Singh S. Nonsyndromic double mesiodentes- hidden lambs among normal flock!. *BMJ Case Reports* 2011; 10.1136/bcr.07.2011.4420, date of publication

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