

## Double Mesiodentes, Bilateral to Midline: A Report of Two Uncommon Cases

Avina Banari<sup>1\*</sup>

<sup>1</sup>Dental Officer, Department of Prosthodontics, Army Dental Corps, Indian Army, India.

### ABSTRACT

**Background:** Spontaneously erupted double mesiodentes, bilateral to midline are extremely rare and can alter both occlusion and appearance by affecting the eruption path, position, inclination and axial rotation of the maxillary permanent incisors.

**Case Report:** Two cases of uncommon occurrence of spontaneously erupted double mesiodentes, bilateral to midline are presented here. The first case report highlights a situation where in treatment has been sought due to esthetic concerns arising, following a spontaneous eruption of bilateral mesiodentes. The second case report highlights a situation wherein there has been disturbances related to increasing diastema, axial rotation and inclination of erupted permanent central incisors caused due to spontaneously erupted double mesiodentes with incidental radiographic finding of congenitally missing permanent maxillary lateral incisors. In both the cases, clinical and radiographic findings clinched the diagnosis and prompt extraction of the mesiodentes was undertaken to reduce the extent of possible future complications and orthodontic treatment.

**Conclusion:** Early diagnosis allows for minimization of the treatment required and prevents development of associated problems. Extraction of the mesiodentes in the early mixed dentition stage may facilitate good alignment of incisors, while minimizing orthodontic intervention for space loss, diastema and midline shift.

**Keywords:** Supernumerary tooth, Incisor, Tooth eruption.

### INTRODUCTION

A supernumerary tooth is one that is additional to the normal series and can be found in almost any region of the dental arch. Approximately 90% of all single tooth supernumeraries are found in the maxillary arch, with a strong predilection to the anterior region. The most common supernumerary tooth which appears in the anterior maxillary midline, in the region of maxillary central incisors is called a mesiodens<sup>1</sup>. Mesiodens may be single, double or multiple



(mesiodentes), unilateral or bilateral, erupted or impacted and in one or both the jaws<sup>2,3</sup>.

The presence of spontaneously erupted double mesiodentes is of rare occurrence and can significantly alter both occlusion and appearance of a developing child. Early diagnosis and early treatment has a particular importance in terms of preventing complications arising due to the presence of double mesiodentes. This paper outlines the modes of presentation of spontaneously erupted double mesiodentes, bilateral to midline and discusses pertinent aspects of their incidence, etiology, morphologic types,

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\*Correspondence: Dr. Avina Banari

Department of Prosthodontics, Army Dental Corps, Indian Army, India.

E-mail: banari123@rediffmail.com

clinical and radiographic diagnosis, complications and management.

### CASE REPORTS

The following two cases represent uncommon occurrence of spontaneously erupted double mesiodentes, bilateral to midline during mixed dentition stage. The first case report highlights a situation where in treatment has been sought due to esthetic concerns arising, following a spontaneous eruption of bilateral mesiodentes. The second case report highlights a situation wherein there has been disturbances related to increasing diastema, axial rotation and inclination of erupted permanent incisors caused due to spontaneously erupted double mesiodentes with incidental radiographic finding of congenitally missing permanent maxillary lateral incisors.

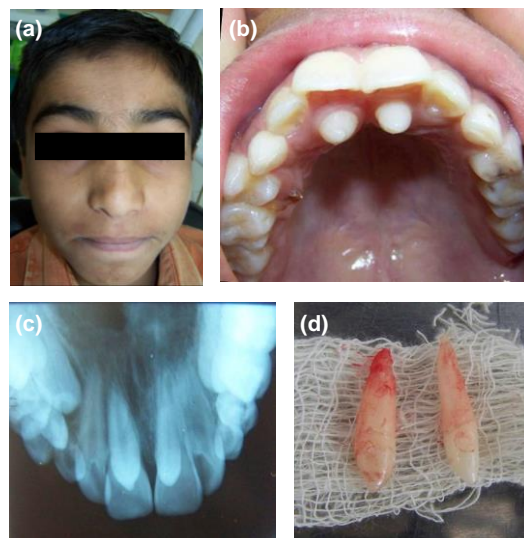
#### CASE 1

A 9½ year old boy was brought to the Military Dental Centre, Pathankot, India, by his father with the chief complaint that his schoolmates were ridiculing him for his “strange looking extra teeth” in the upper front region of the mouth. Parents started noticing two teeth like protuberances behind his upper permanent incisors since he was 7 ½ years old. They did not bother him much while chewing.

The patient had never been to a dentist before and his physical development was normal with no remarkable medical history. Neither of his parents nor his siblings demonstrated similar anomalies. Although he had a co-operative behaviour, he seemed to be in an obvious psychological distress owing to his anomalous teeth (Figure 1a). Intraoral examination revealed the presence of two conical shaped supernumerary teeth, located just palatally to permanent upper central incisors, bilateral to midline (Figure 1b). The two permanent maxillary incisors were surprisingly well aligned without any diastema or midline shift. Further, it was noted that he was in a mixed dentition stage with an over retained, carious, deciduous upper right first molar. Oral hygiene of the patient was reasonable.

Standard occlusal radiograph (Figure 1c) of the maxillary anterior region revealed both the conical supernumerary teeth to be with completely

formed root and situated bilateral to median palatal suture. Root development of the maxillary permanent lateral incisors was noted to be nearing completion. No apparent abnormality was observed with the roots of permanent central and lateral incisors. Essential findings from the clinical and radiological investigations led to conclusive diagnosis of double mesiodentes, bilateral to midline. Owing to patient’s chief complaint and possible sequelae of retaining mesiodentes, a treatment plan involving extraction of double mesiodentes under local anesthesia (2% Lidocaine) was performed with parental approval. Only nasopalatine nerve block was used to anesthetize the mesiodentes. A bayonet forceps was used to extract the mesiodentes without any trauma to the roots of central incisors (Figure 1d). Post operative healing was uneventful and the patient’s self-confidence and morale was up, post treatment. The over retained carious, deciduous upper right first molar was extracted in the next visit without any complication. The patient did not warrant any orthodontic intervention in subsequent recall visits.



**Fig 1:** (a) Frontal profile photo of the 9½ year old patient. (b) Intraoral view demonstrating the palatally erupted double mesiodentes, bilateral to midline. Note the alignment of maxillary central and lateral incisors, and over-retained root stumps of maxillary deciduous left first molar. (c) Standard occlusal view of the anterior maxillary region demonstrating the position of mesiodentes bilateral to median palatal suture and the extent of root development. (d) Freshly extracted specimens of mesiodentes.

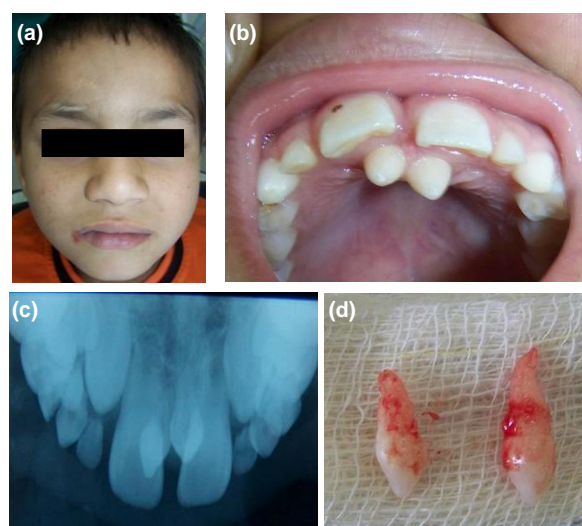
**CASE 2**

An 8½ year old boy was referred to Military Dental Centre, Pathankot, India, with the chief complaint of “extra teeth” in the upper anterior region of the mouth. Parents noted irregularities in the freshly erupted upper central incisors about 08 months ago. Apparently, the boy had complained to his parents regarding two protuberances behind his upper front teeth approximately 4 months ago.

The patient’s physical development was normal and his medical history was non-contributory. Neither of his parents nor his siblings demonstrated similar anomalies. Extraorally, a crusting, cracking and tender lesion was noted at the right labial commissure (Figure 2a). The intraoral examination confirmed the patient’s chief complaint. Two small conical shaped crowns were protruding just palatal to upper permanent central incisors, bilateral to midline. The upper right permanent maxillary central incisor was slightly proclined labially and axially rotated. Maxillary anterior spacing was slightly excessive with a 2-3 mm midline diastema present (Figure 2b). Primary laterals were slightly mobile. However, all the other teeth were in the normal alignment and patient was in mixed dentition stage. Oral hygiene of the patient was poor with multiple carious teeth.

Occlusal radiograph of the maxillary anterior region revealed both the conical supernumerary teeth with completely formed root and situated bilateral to median palatal suture (Figure 2c). Root development of the permanent maxillary central incisors was noted to be nearing completion with the supernumerary teeth primarily affecting tooth position of right central incisor. The root of the right permanent central incisor had migrated distally, owing to the presence of the supernumerary teeth. The permanent maxillary lateral incisors were found to be congenitally missing. The data provided by the clinical and radiographic examination was conclusive of double mesiodentes, bilateral to midline. Since the mesiodentes were gradually altering both occlusion and appearance by labially displacing and axially rotating permanent right central incisor, a prompt treatment plan involving extraction of double mesiodentes under local anesthesia (2% Lidocaine) was undertaken with parental consent. Only

nasopalatine nerve block was used to anesthetize the mesiodentes. A bayonet forceps was then used to extract the mesiodentes atraumatically (Figure 2d). A topical analgesic, anti-inflammatory cream (Lidocaine 2%, choline salicylate 8.7%, benzalkonium chloride 0.01%) was prescribed for angular cheilitis, to be applied locally for several days till the lesion healed. Post-extraction wound healing was uneventful and the patient was scheduled for monthly recalls. Removal of the double mesiodentes had slightly aided to the self-correction of axial rotations of the right central incisor and further improvement was expected with subsequent eruption of maxillary permanent canines. Restorative care and fluoride application was undertaken successively. A comprehensive orthodontic and prosthodontic review was advised to him, post-eruption of permanent maxillary canines.



**Fig 2:** (a) Frontal profile photo of the 8½ year old patient. Note the presence of angular cheilitis at the left labial commissure. (b) Intraoral view demonstrating the palatally erupted double mesiodentes, bilateral to midline. Note the alignment of maxillary central incisors and diastema. (c) Standard occlusal view of the anterior maxillary region demonstrating the position of mesiodentes bilateral to median palatal suture and the extent of root development. Note the incidental finding congenitally missing permanent lateral incisors. (d) Freshly extracted specimens of mesiodentes.

**DISCUSSION**

Spontaneously erupted, homomorphic, double mesiodentes, bilateral to midline which is neither non-syndromic nor nonfamilial, is a

rare occurrence and this article reports two such cases.

There seems to be racial variations in the prevalence of mesiodens with higher frequencies found in Mongoloid, Eskimo and Hispanic populations<sup>3</sup>. The overall prevalence of mesiodentes is between 0.15% and 1.9%, with higher prevalence rate in permanent dentition<sup>2,5,6</sup>. There is no significant sex distribution of mesiodens in primary dentition; however, the prevalence of mesiodens in males is twice as high as in females in permanent dentition<sup>7</sup>.

Most commonly mesiodens occurs singly. Infrequently, they occur in multiples (mesiodentes). They may appear unilaterally or bilaterally. The bilateral mesiodentes reported in present case series, probably might have originated from the permanent dentition tooth bud since in the primary dentition, supernumerary teeth occurs most often in the lateral incisor regions, as opposed to permanent dentition supernumerary teeth, which prevails in the central incisor regions<sup>8</sup>.

In terms of morphologic types, a single conical shaped mesiodens is the most common (30.5%) followed by a conical and tuberculate combination (23.2%), a single tuberculate - shaped tooth (17.1%), paired conical- shaped teeth (13.4%) and paired tuberculate - shaped teeth. Molariform (supplemental) mesiodens is rare, despite its occurrence as single teeth (3.7%) or paired combination with respect to conical - (2.4%) or tuberculate shaped teeth (1.2%). In general, in patients with double mesiodentes, the occurrence of heteromorphic combinations is far greater than that of homomorphic combination<sup>9</sup>.

The position of the mesiodens can be recorded as 'between central incisors' and 'overlap' and its orientation can be described as 'vertical', 'inverted' and 'transverse'<sup>10</sup>. Among mesiodens, conical shaped and vertically positioned mesiodens which often have a completely formed root, can spontaneously erupt either partially or completely into the oral cavity<sup>11</sup>. However, if they did spontaneously erupt, they can do so at any age, but usually between the ages of 3 and 7. Most often, mesiodens is detected either in mixed dentition stage. All inverted and transversely positioned mesiodens are impacted. When inverted, the crown

points superiorly, and are less likely to erupt into the oral cavity; inverted conical mesiodentes have occasionally erupted into the nasal cavity.

The etiology of mesiodens still remains unclear. The literature reports several theories suggesting the cause of mesiodentes. These theories include phylogenetic reversion (atavistic theory), split in tooth bud (dichotomy theory), locally and independently conditioned hyperactivity of the dental lamina (dental lamina theory) and a combination of genetic and environmental factors (unified etiologic explanation). It may be appropriate to consider mesiodens as a multifactorial inheritance disorder originating from localized and independent hyperactivity of dental lamina<sup>12</sup>.

Whilst the occurrence of supernumerary teeth cannot be predicted, the influence of genetic factors is strongly suggested. Development of mesiodentes among identical twins<sup>4,13</sup>, familial occurrence of mesiodens involving siblings and sequential generations of a single family<sup>14</sup>, have led to the conclusion that mesiodens could be an autosomal dominant condition with incomplete penetrance. Further, mesiodentes are also frequently associated with various craniofacial anomalies, including cleft lip and palate, Gardner's syndrome and cleidocranial dysostosis<sup>15</sup>. A sexlinked pattern of inheritance may also be acting, as males are affected twice as frequently as females<sup>11</sup>.

One-third of all patients with a mesiodens also have other supernumerary teeth; however, some patients present with mesiodentes in conjunction with congenitally missing teeth<sup>16</sup>. Incidentally, in the second case report presented here, there was a radiographic evidence of congenital absence of permanent maxillary lateral incisors and the striking presence of double mesiodens, bilateral to midline. Such a combination of anomalies could be interpreted as transposition of maxillary central and lateral incisors. However, the possibility of transposition can be refuted on the basis of absence of history of trauma to the patient, unusual morphology of tooth and common occurrence of congenital absence of lateral incisors.

Maxillary occlusal, periapical radiographs and panoramic are indicated to assist in the diagnosis of mesiodentes. The panoramic radiograph is unreliable in these types of cases as the focal trough is very narrow in the anterior region causing lack of clarity in the midline region. Part of the anterior maxilla may lie outside the trough and may not be visualized. A panoramic radiograph serves as a screening aid and provides additional information about the associated supernumerary or congenitally missing teeth that are frequently seen with mesiodentes. Three-dimensional information needed to determine the location of the mesiodens can be obtained by taking two periapical radiographs and by using either 2 projections taken at right angles to one another or the tube shift technique (buccal object rule or Clark's rule).

Mesiodentes often interfere with the eruption and alignment of the maxillary incisors. They can delay or prevent eruption of central incisors in 26% to 52% of cases; cause ectopic eruption, displacement or rotation of a central incisor in 28% to 63% of cases; and labially displace incisors in 82% of cases<sup>11</sup>. Less common complications involving the permanent incisors include dilacerations of the developing roots, root resorption and loss of tooth vitality. Complications involving the mesiodens itself include eruption of the mesiodens into the nasal cavity; development of a dentigerous cyst has been reported in 4% to 9% of cases<sup>11</sup>.

Since only 25% of all mesiodens erupt spontaneously, surgical management usually is necessary. A mesiodens that is conical in shape and is not inverted has a better chance for eruption than a mesiodens that is tubercular in shape and is inverted. There are two schools of thoughts for the removal of mesiodentes<sup>17</sup>. The delayed approach recommends intervention upon apical maturation of the central and lateral incisors, at an age around eight to ten years. The immediate approach calls for removal of mesiodentes soon after the initial diagnosis of their presence<sup>2</sup>. Most mesiodentes are removed at the age of seven to nine years with peak at eight years old and some are done at a later age due to uncompleted root development of the central incisors and as a preventive measure against causing injury to the developing roots<sup>18</sup>. The second approach suggests intervention at approximately

eight to nine years of age or at the time when the upper central incisors are erupting; as this can reduce the surgical anxiety and surgical trauma since this procedure is conducted under general anaesthesia. Also, it prevents interference with the eruption of the permanent incisors<sup>19</sup>.

The treatment objective for a non-erupting permanent tooth mesiodens is to minimize eruption problems for the permanent incisors as unerupted mesiodens may often cause retardation or obstruction of eruption of permanent incisors which may result in mesial shifting of the teeth to the opposite side, exceeding the midline and obliterating space for future eruption of succeeding central incisor. The treatment objective for a non-erupting primary tooth mesiodens differs in that the removal of these teeth usually is not recommended as the surgical intervention may disrupt or damage the underlying developing permanent teeth. Erupted primary tooth mesiodens typically are left to shed normally upon the eruption of the permanent dentition.

Extraction of an unerupted primary or permanent dentition mesiodens is recommended during the mixed dentition to allow the normal eruptive force of the permanent incisor to bring itself into the oral cavity. Waiting until the adjacent incisors have completed at least two thirds of their root development will present less risk to the developing teeth but still allow spontaneous eruption of the incisors. In 75% of the cases, extraction of the mesiodens during the mixed dentition results in spontaneous eruption and alignment of the adjacent teeth. If the adjacent teeth do not erupt within 6 to 12 months, surgical exposure and orthodontic treatment may be necessary to aid their eruption. The diagnosing dentist may consider a multidisciplinary approach when treating difficult or complex cases.

Two treatment options available for patients with congenitally missing laterals are opening space or closing space<sup>20</sup>. Today implants have become the restoration of choice, when the treatment plan is to close the open space. For patients with congenitally missing lateral incisors who have over-retained primary lateral incisors, keeping the primary tooth as long as possible should be considered to preserve the supporting alveolar bone for future implants<sup>21</sup>. In these cases,

composite resin can be added to the small deciduous tooth to create a tooth with similar proportions to the final restoration in future. This allows space and bone as well as esthetics to be maintained until the definitive implant is placed<sup>21</sup>. In cases where the occlusion and esthetics of the canine in the lateral position are acceptable, closure of the lateral space by the mesially positioned canine may be the simplest alternative treatment option. The benefit of space closure over prosthetic replacement depends on the specific occlusion as well as the morphology and esthetics of the canine.

In conclusion, it is important not only to enumerate but also to identify the supernumerary teeth present clinically and radiographically before a conclusive diagnosis and treatment plan can be charted. Double mesiodentes may interfere with normal occlusal development in early mixed dentition stage and may cause pathological complications later in the permanent dentition stage. Therefore, early diagnosis of mesiodentes during the primary or mixed dentition stage is essential for more favourable prognosis and to minimize the need for extensive intervention.

#### What this paper adds

- Recording two cases of uncommon occurrence of spontaneously erupted, homomorphic, non-syndromic and non-familial double mesiodentes, bilateral to midline.
- Recording of occurrence of double mesiodentes in conjunction with congenitally missing permanent maxillary lateral incisors.

#### Why this paper is important to Paediatric dentists

- Spontaneously erupted double mesiodentes may pose esthetic problems which may cause psychological distress to the growing child.
- Adding new clinical experience for management of double mesiodentes during mixed dentition stage, as these cases are extremely rare.
- Long term monitoring and follow up is very important when dealing with paediatric and adolescent dental patients with mesiodentes.

#### CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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