



Multiple submerged, impacted primary molars associated with multiple unusual dental anomalies – Report of a rarest case

*Dr. Nagaveni NB^{1,2}

¹Professor, Consultant Pediatric Dentist “Garike Dental Care” Davangere, Karnataka, India

²Consultant Pediatric Dentist, Dental wing, Karnataka ENT Hospital and Research Centre, Chitradurga, Karnataka, India.

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*Corresponding author: **Dr. Nagaveni NB**

Professor, Consultant Pediatric Dentist “Garike Dental Care” Davangere, Karnataka, India

Abstract

Occurrence of multiple dental anomalies in a syndromic patient is a common finding during routine clinical practice. However, development of multiple tooth anomalies in a non-syndromic patient is an extremely rare finding. In addition to this occurrence of unusual dental anomalies and variations are still an uncommon entity. The present article showcases occurrence of multiple submerged and impacted primary molars, impaction of permanent mandibular first molar, congenital agenesis of bilateral mandibular second premolars and disto-angular impaction with radiculomegaly involving maxillary second premolar. All these unusual dental anomalies were recorded in a 16-year-old male patient from Indian ethnicity. There are individual case reports exhibiting presence of either any one of these mentioned tooth anomalies. However, explore of extensive dental anomalies’ literature did not reveal publications showing these anomalies in a single patient. Therefore, the present case is the first case in the dental literature illustrating multiple extremely rare clinical entities in a single patient.

Keywords: Impaction of molar, Multiple tooth anomalies, non-syndromic patient, Premolar agenesis, Radiculomegaly, Submerged primary molar.

INTRODUCTION

Various dental anomalies and conditions in children are encountered by a clinician during clinical practice [1-6]. Submerged primary molars is one among these referring to an affected teeth that do not erupt to the level of adjacent normal occluding teeth or submerged teeth are always found 0.5 mm or more below the intact marginal ridges of the adjacent teeth. Their prevalence in children varies from 1.3 to 3.5% and this incidence occurs after eruption of teeth in the oral cavity [7]. The most frequently involved teeth are the mandibular second molars with unilateral occurrence are the most reported type. Bilateral occurrence of submerged primary molars is a rare condition. Presence of submerged primary molars can lead to malocclusion because of over-retention and delayed resorption of their roots thereby preventing eruption of their succedaneous teeth [8].

Presence of impaction and eruption failure in primary teeth are relatively rare compared to permanent teeth. Among primary teeth, second primary molars are most frequently affected followed by primary central incisors. In addition, impaction cases are more commonly reported in the mandibular arch than maxillary arch. Primary teeth in impaction cause displacement of the succedaneous permanent tooth and disturb the growth of the permanent dental arch. Primary molars impaction cases also showed positioning of second premolar on the occlusal side of the impacted tooth [8].

The incidence of eruption failure in first permanent molar is a rare phenomenon reported with a prevalence of 0.01% of the population [9]. It is known fact that the permanent molars are key teeth in providing adequate occlusal support as well as coordinating facial growth. When permanent first molar doesn't erupt, can lead to wide range of complications like extrusion of opposite tooth, posterior open bite, cyst formation, inclination and resorption of adjacent teeth and reduction in the vertical dimension [10-12].

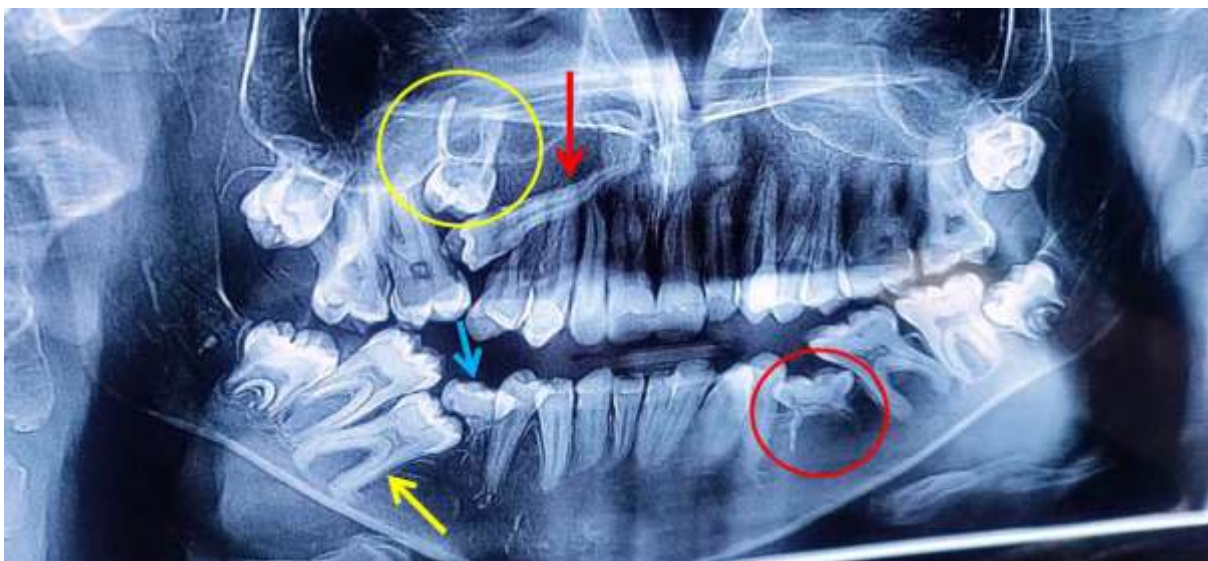
Radiculomegaly is a distinct root abnormality refers to a marked elongation of the dental roots. In the dental literature, it is mentioned with other synonyms like root gigantism or extremely long roots. It is associated with a major clinical significance relating closely to the oculofaciocardiodental syndrome. Non-syndromic occurrence of radiculomegaly is extremely rare and if it occurs most commonly involves the permanent canines. It may involve either a single tooth root or found in generalized form [13].

Congenital agenesis of mandibular second premolars is a commonly observable clinical entity [4]. Compared to maxillary second premolar agenesis, the estimated prevalence of mandibular second premolar agenesis is 4.4%. In the maxilla, its prevalence is just about 1.7% [4]. The exact etiology is not known however, various factors have been suggested as possible causative factors.

Extensive review of the dental literature revealed publications on individual dental anomalies [13-26]. Occurrence of multiple anomalies in a syndromic patient is more commonly observable finding. However, presence of multiple tooth anomalies in a non-syndromic individual is an extremely rare clinical entity. The present article illustrates presence of numerous tooth anomalies like multiple submerged primary molars, an impacted permanent mandibular first molar, impacted maxillary second premolar associated with a root gigantism and impaction of the primary maxillary second molar. all these dental variations occurred in a 16-year-old Indian male patient.

Case report

A 16-year-old male Indian patient reported to a private dental clinic complaining of missing tooth in the left lower back tooth. Patient was well nourished having moderate built. He did not show any signs and symptoms of systemic, metabolic and syndromic disorders. Intraoral examination was carried which showed presence of space in the mandibular left posterior region. The permanent mandibular left second premolar appeared to be missing. On the right side, the primary mandibular second molar was found to be in infraocclusion compared to the adjacent teeth and missing of permanent first molar and second premolar. In the maxillary right arch too the second premolar was not found. There was no history of previous teeth extraction. To rule out the presence or agenesis of suspected teeth, patient was subjected to a panoramic radiograph. Examination of the radiograph showed multiple unusual dental variations. In the maxillary right quadrant, the primary second molar was impacted, located high in the alveolus close to the maxillary sinus (Figure 1). The second premolar was also impacted in disto-angular position with crown towards distally and root towards dental midline. The root appeared extremely long having curvatures. When length was measured using a calibrated scale, it showed almost 32 mm. The root was placed above the roots of the right central incisor. In the right quadrant of the mandibular arch, the primary second molar appeared submerged with completely resorbed roots. The right first permanent molar was also impacted in mesio-angular position with crown drifted mesially and its roots pushed distal side. The roots were dilacerated at the apex and placed close to the lower border of the mandible. On the left side, the second primary molar was also impacted, placed below the cervical part of the adjacent erupted teeth, showing partial root resorption (Figure 1). Based on radiographic findings and literature search, a diagnosis of idiopathic, non-syndromic submerged primary molars, impaction of the mandibular first permanent molar with severe root dilaceration, congenital bilateral agenesis of mandibular second premolars, impaction of the maxillary second primary molar and maxillary second premolar with radiculomegaly (Table 1). Patient was informed about the presence of multiple dental conditions in his dental arch and scheduled for further treatment.



Figure_1: Radiographic picture showing an impacted maxillary primary right second molar close to the maxillary sinus (yellow circle), an impacted permanent maxillary right second premolar with root gigantism (red arrow), and an impacted mandibular right first permanent molar which is close to the inferior border of the mandible (yellow arrow). Submerged primary mandibular left (red circle) and right second molar (blue arrow) and bilateral (both right and left) agenesis of mandibular second premolars are also evident.

Table 1: Patient details associated with multiple tooth anomalies

Age & Gender	Ethnicity	Chief Complaint	Clinical Features	Radiographic Features
16 years Male	Indian	Presence of gap in the left lower back tooth region	Clinical missing of permanent maxillary right second premolar permanent mandibular left and right second premolars and permanent mandibular right first molar	Severe impaction of the maxillary primary right second molar close to the maxillary sinus Disto-angular impaction of the maxillary right second premolar with radiculomegaly or root gigantism Severe impaction of the permanent right mandibular first molar close to the inferior border of the mandible with root dilaceration Submerged right and left primary mandibular second molars with partial root resorption Congenital agenesis of both right and left mandibular second premolars

DISCUSSION

The present article showcases presence of few submerged primary molars, impaction of the permanent first molar, impaction of second premolar with radiculomegaly (root gigantism), congenital agenesis of mandibular bilateral second premolars and severe impaction of primary second molar in a non-syndromic 16-year-old male Indian patient. Based on current literature review, this combination of different dental conditions in a single patient is not reported till date. Therefore, this case presentation represents the first rare case report alerting all dental clinicians about the possibility of such tooth variations and in turn urgency in early diagnosis to provide utmost dental care.

Henderson [7] long back studied the possible etiology behind occurrence of submerged primary molars and explained that if a patient is having one or two ankylosed teeth, there are more chances of other teeth too getting ankylosed over a period of time. Sometimes, submerged molars undergo a variable degree of root resorption and then become ankylosed to the bone. Following eruption of the permanent teeth, the ankylosed primary molar appears submerged below the level of occlusion [8]. This illusion of ‘submergence’ is created due to continued growth of the alveolar process in relation to the adjacent permanent teeth [7]. However, literature shows infection, disturbed local metabolism, genetic factor and trauma as possible causative factors. In the current article, two primary molars in the mandibular arch were submerged one on the right side and one on the left side. On the left side, the primary second molar was placed at the cervical part of the adjacent tooth with presence of roots. On the right side, there was complete root resorption thereby drifted the permanent first molar distally leading to an impaction. In addition to this bilateral agenesis of mandibular second premolars was also evident.

It is known fact that the permanent molars are key teeth in providing adequate occlusal support as well as coordinating facial growth. When permanent first molar doesn't erupt, can lead to wide range of complications like extrusion of opposite tooth, posterior open bite, cyst formation, inclination and resorption of adjacent teeth and reduction in the vertical dimension [9]. Compared to other teeth, the impaction of permanent first molars are relatively a rare entity. An old survey reported that, out of 4745 subjects investigated 1218 impactions of teeth were observed. Among this, only three impacted mandibular first molars were found [10]. In another survey performed by Grover and Lorton [11] examined 5,000 orthopantomographs of Army residents and found only one maxillary impacted molar but no instances of impacted mandibular first molar. Babacan H et al [12] reported two cases including maxillary first molar and mandibular first molar impaction in a Turkish patient. As permanent first molars are important for establishing occlusion, eruptive guidance is required before surgical removal. In some cases, combined surgical-orthodontic approach is required. In the case described here, the right permanent first molar in the mandibular arch was impacted with its roots placed closer to the inferior border of the mandible with severe root dilaceration present at the apex [9,10].

The exact etiology of tooth impaction includes systemic and local factors like eruption cyst, odontoma, tooth displacement, ankylosis, gingival hyperplasia, eruption space deficiency and systemic factors [7,8]. Delayed detection and treatment of primary tooth impaction might cause delayed eruption, impaction and displacement of the succedaneous permanent tooth. This finding is more evident in the present case, showing impaction and displacement of maxillary second premolar and mandibular permanent first molar. The maxillary second premolar was impacted in a disto-angular impaction with root displaced mesially towards dental midline and crown displaced towards distal side. A recent Indian, retrospective and radiographic study [8] evaluated prevalence of primary molars impaction in south Indian population and found five cases of primary molar's impaction. Among these five cases, all cases were found in the mandibular arch. There were three boys (60%) and two girls (40%). Impaction of the first primary molar was observed in only one case (20%) followed by four cases of second molar impaction (80%). Four were noticed on the left side (80%) and one on the right side (20%). In this study based on the level of impactions found author upgraded a new classification system to categorize the level of primary molar impaction. Based on this classification the impacted primary second molar in the maxillary arch was categorized as type III (extremely severe form) as the primary second molar was located high in the alveolus close to the maxillary sinus with complete roots not showing any evidence of root resorption. This type of primary second molar impaction is not reported till date based on author's current knowledge.

'Radiculomegaly' also called as 'root gigantism' is an anomaly of the root structure, most commonly involves permanent canines [13]. The roots in canines with radiculomegaly measures more than 26 mm as compared to the normal length varying from 25 to 26 mm. In the mandibular arch, the roots extend till the lower border of the mandible, and in the maxillary arch, it extends to the orbital floor. Report of individual premolar radiculomegaly are extremely rare except in the generalized form. In the present case, the root length of maxillary second premolar measured 32 mm indicating root gigantism. Moreover, root dilaceration of moderate degree was also evident in the root. The clinical significance associated with radiculomegaly is that they might pose problem during extraction procedure as great amount of resistance required during their removal. Nagaveni NB recently reported occurrence of radiculomegaly involving maxillary permanent right lateral incisor and all permanent canines except right mandibular canine which is also individually not reported [13].

Bilateral agenesis of mandibular second premolars are rarely reported in the literature. Recent case report showed bilateral agenesis of maxillary second premolars and bilateral ectopic eruption of mandibular first molars [4]. In another rarest publication mandibular supernumerary molar was associated with congenital agenesis of all four second premolars in both maxillary and mandibular arches [23]. In the present case, retained and submerged primary second molars were present along with congenital agenesis of bilateral mandibular second premolars. Therefore, whenever a clinician come across situations like retained primary molars exist beyond their exfoliation time, it should strike to the mind that its succedaneous permanent teeth might be congenitally missing or get impacted.

CONCLUSION

The current article is an example showing possibility of formation of various dental anomalies without a proper etiology in an individual. Therefore, an awareness and knowledge on occurrence of different tooth anomalies and conditions are highly essential among all dental professionals to identify them early, diagnose properly and to provide appropriate treatment.

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