

## Impacted Primary Mandibular Second Molar Associated with Late-Formed Second Premolar: A Rare Entity of Reverse Dentition

### Abstract

Impaction of the tooth in primary dentition is very less common than the permanent dentition. Impaction of teeth in primary dentition may create various problems in occlusion and also in developing dentition. Clinical and radiographic evaluation of such cases may benefit the patient as well as the clinician. Among primary tooth impaction cases, second primary molars are not frequently reported along with late formation of its succedaneous tooth. Nevertheless, the purpose of this report was to describe a case of a rare entity of reverse dentition caused by the impaction of the mandibular primary second molar associated with delayed formation of the second premolar.

**Keywords:** *Ankylosis, impaction, primary molar, reverse dentition*

### Introduction

Tooth eruption is defined as progression of a tooth from developmental position to its functional position in the oral cavity.<sup>[1-3]</sup> Any disturbance in this process may lead to eruptive disturbances. Reports on impaction and eruption failures in primary dentition are relatively rare compared to permanent dentition.<sup>[1,2]</sup> Among primary tooth impactions, second primary molars are most frequently affected, followed by primary central incisors.<sup>[2,3]</sup> Trauma is the most frequent cause damaging either the dental follicle or the developing periodontal ligament; nonetheless, the exact etiology has not been clearly documented.<sup>[1,4]</sup> If it happens, then the eruption of the tooth may be apprehended and it becomes ankylosed in the jaw bone.<sup>[2,3]</sup> Moreover, in some cases, impaction may cause various problems in underlying to germs such as delayed eruption, ectopic eruption, and sometimes it may go missing.<sup>[5,6]</sup> Therefore, identification and proper management plan of impacted primary teeth are essential.<sup>[3,4]</sup> However, it is very rare to see the development of the underlying permanent tooth germ gets delayed due to impaction of primary tooth. Therefore, the purpose of the present case study was to describe a rare case of a rare entity of reverse dentition caused by impaction of the primary mandibular second

molar associated with delayed formation of the second premolar.

### Case Report

An 11-year-old girl was referred to the department of pedodontics and preventive dentistry for a routine dental checkup as a part of School Dental Health Program. Her medical and familial histories were not contributory and she is the only child to nonconsanguineous parents. This was her first visit to a dentist, and hence, she did not undergo any dental treatments. On extraoral examination, her appearance and gait were normal and no significant asymmetry or abnormalities were distinguished. Intraorally, she presented with permanent dentition with adequate oral hygiene. She was presented with Angle's Class I molar relation and teeth 13 and 45 were clinically missing and teeth 36 and 46 were noted with carious lesion [Figure 1]. On radiographic examination (orthopantomogram), impaction of teeth 13 and 85 was evident. There was evidence of a radiolucency of 0.5 mm diameter resembling a follicular space (inner white circle) near to the occlusal surface of tooth 85 [Figure 2]. A cone-beam computed tomography (CBCT) scan was performed and all various sections of CBCT revealed the presence of an apically underlying second primary molar above which a follicular space containing a developing tooth bud (Nolla's

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stage A) was present [Figure 3]. Late-formed second premolar was occurred due to impaction of second primary molar. Based on clinical and radiographic findings it was considered as delayed formation of tooth 45 caused by severe impaction of tooth 85. The following management options were given to the parents upon restorations of teeth 36 and 46: (i) no immediate treatment and allow eruption of tooth 45 with regular monitoring, (ii) surgical removal of impacted tooth 85 and monitor eruption of tooth 45, and (iii) surgical removal of tooth 85 and tooth germ 45 and space maintainer to maintain space as a short- and long-term implants/crown and bridge was considered. The patient's parents preferred the first option, and informed

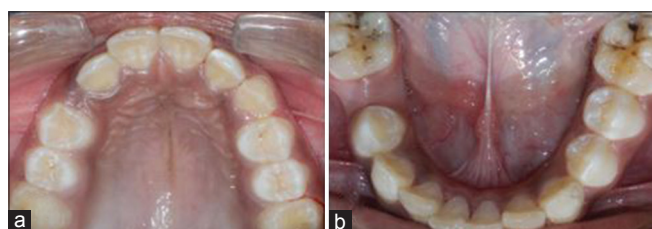


Figure 1: Intraoral views of maxillary arch (a) and mandibular arch (b)



Figure 2: Orthopantomogram showing impacted tooth 13 in maxillary arch and tooth 85 in mandibular arch and presence of tooth germ of 45 in the follicular space above to the tooth 85

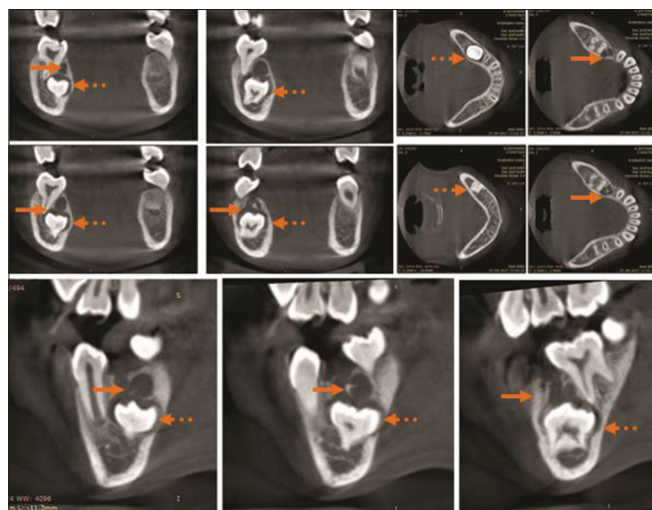


Figure 3: Various cone-beam computed tomography sections showing severely impacted tooth 85 (dotted arrows) and formation and presence of tooth germ 45 (arrows)

consent was obtained from patient parents. Hence, the patient has been kept under review for further treatment.

## Discussion

Impacted tooth is covered by an intact mucosa and radiographs reveal the tooth to be deeply hidden in the jaw bone which is considered as failure of eruption.<sup>[5,6]</sup> In the present case, tooth 85 got severely impacted and caused infraocclusion. It has been reported that infraoccluded primary molar may or may not have succedaneous teeth.<sup>[7]</sup> On panoramic radiograph, there was an evident of tooth follicle near to the impacted tooth germ, and hence, the CBCT has advised to rule out the development of the pathology. The CBCT images showed tooth 85 severe impaction probably caused infra-occlusion. Tooth 45 was at Nolla's stage A and contra lateral tooth 35 was at Nolla's stage H.<sup>[8]</sup> We opine that severe impaction of tooth 85 caused the delayed development of tooth 45. The development of the tooth 85 had have been arrested and the development of the tooth germ 45 has been started towards occlusion and the scenario looks like the tooth 45 is going to emerge into the oral cavity. Authors opined this entity as a reverse dentition. It has been reported that only conventional radiographs would provide 2-dimensional image of a 3-dimintional structure.<sup>[9,10]</sup> Nevertheless, the 3D-images were advised to indentify the severity of impaction of tooth 85 and presence of underlying tooth germ of tooth 45.

Memarpour *et al.*<sup>[11]</sup> suggested the extraction of impacted tooth to allow eruption of the permanent tooth germ. Matsuyama *et al.*<sup>[12]</sup> reported two cases; among those, removal of impacted primary tooth was performed in one case and, in the other case, the impacted tooth remained and the successor of the tooth was erupted without intervention. These authors opined that the long-term observation of this anomaly would also sometimes favors to the clinical situation. Conversely, Ferro *et al.*<sup>[13]</sup> removed permanent tooth germ along with impacted primary molar because they observed cystic pathology involving both the teeth. Hence, the treatment option was justified. Tsukamoto and Braham<sup>[15]</sup> also performed extraction of both unerupted second primary molar and impacted second premolar in a 10-year-old boy. In addition to this recently, Balaji<sup>[14]</sup> also recommended the surgical removal of impacted second premolar along with severe infraoccluded primary second molar, upon evidence of cystic changes.

The present case was completely different from all the cases<sup>[1-6,11-15]</sup> that were reported in the literature. In all those cases,<sup>[1-6,11-15]</sup> the development of affected permanent tooth germ was almost similar with their contralateral tooth. However, in our case, it was evident that a huge difference in the development of both counterparts. Hence, none of the treatment options was considered and the tooth was in Nolla's stage A. Moreover, we opine that the severe impacted primary second molar caused the late formation of permanent tooth germ, and the authors' assumption

was that there may be a change of late development of permanent tooth germs in the case of severe infraocclusion due to the impaction of failure of eruption. Besides to that in the present case, the late formation of permanent tooth germ was formed above to the impacted primary second molar. This primary second molar in the mandibular arch is not going to erupt since the tooth got ankylosed and it looks like the permanent tooth germ is going to emerge into the oral cavity before its predecessor, and hence the authors called this entity as reverse dentition. Nonetheless, we suggest long-term periodic radiographic evolution of such teeth was recommended.

## Conclusion

Impaction and failure of eruption in primary molar might be associated with a disturbance in the development of the permanent successors. It is important that pediatric dentists notice the impaction of primary molars during primary dentition to prevent disturbing the complete and sound eruption of permanent dentition and avoid treatment complications. Furthermore, the present case serves as a typical example of reverse dentition entity.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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