CASE REPORT

Management of ectopically erupting permanent molars in a seven-year-old girl: A case report

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Abstract

Ectopic eruption of permanent first molar is a developmental disturbance, leading to many local problems, such as premature loss of the second primary molars, space loss, increased prevalence of dental caries, supraeruption of the opposing molars, mesial inclination of the permanent maxillary first molars and class II molar relationship. We report the case of a seven-and-a-half-year-old girl with ectopic eruption of permanent maxillary and mandibular first molar, treated by orthodontic separators and slicing the distal surface of the adjacent primary second molar separately. Regular examination and timely interception are important during oral health management of children and is of great significance in alleviating the side effects of ectopic eruption.

Keywords: Dental management, Ectopic eruption, Permanent first molars.

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Introduction

Normal eruption of permanent first molars is essential for the establishment of normal occlusion. Ectopic eruption (EE) of permanent first molar is a developmental disturbance with the manifestation of mesial angle eruption path.[1] Some EE of permanent first molars, called self-correcting (SC) or reversible type, will free themselves from the locked place and erupt into normal alignment. Others, called irreversible (IRR) type, remain locked under the distal prominence or cervical root area of the second primary molar and cannot erupt into their predetermined place.[2] EE of permanent first molar may lead to many problems, such as premature loss of the second primary molar, space loss, increased prevalence of dental caries, supraeruption of the opposing molars, mesial inclination of the permanent maxillary first molar and class II molar relationship.[1] So timely correction of EE is of great significance in the management of oral health in a paediatric clinic.

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This case report presents a patient diagnosed with EE of permanent first molars. The consent of the guardian was taken prior to the writing of the manuscript.

Case Report

A seven-and-a-half-year-old girl was referred to the West China Hospital of Stomatology, Sichuan University, on August 30, 2019, with chief complaint of dental caries. Clinically, she was in the mixed dentition stage. Permanent left first molars erupted into the occlusal plane. Permanent mandibular right first molar was minimally impacted with part of its crown visible in the mouth. Permanent maxillary right first molar was not visible on intraoral examination. No mobility and symptoms were present with primary maxillary right second molar. Premature loss of primary mandibular right canine was observed. Panoramic radiograph revealed that the mesial edge of permanent mandibular right first molar was impacted under the distal bulge of primary mandibular right second molar and mesio-occlusal surfaces of permanent maxillary right first molar were in contact with the cervical root area of the primary second molar (Figure-1). The resorption of the primary second molar distal root was severe, graded as III resorption according to Barberia-Leache's classification.[3]

The treatment goal at this stage was to guide the permanent right first molars into normal position. The crowded maxillary and mandibular dentition could be solved in phase II treatment, probably with serial

Figure-1: Initial panoramic radiograph revealing impediment of eruption of teeth 16 and 46 by the teeth 55 and 85, respectively and severe resorption of the distal root of tooth 55.

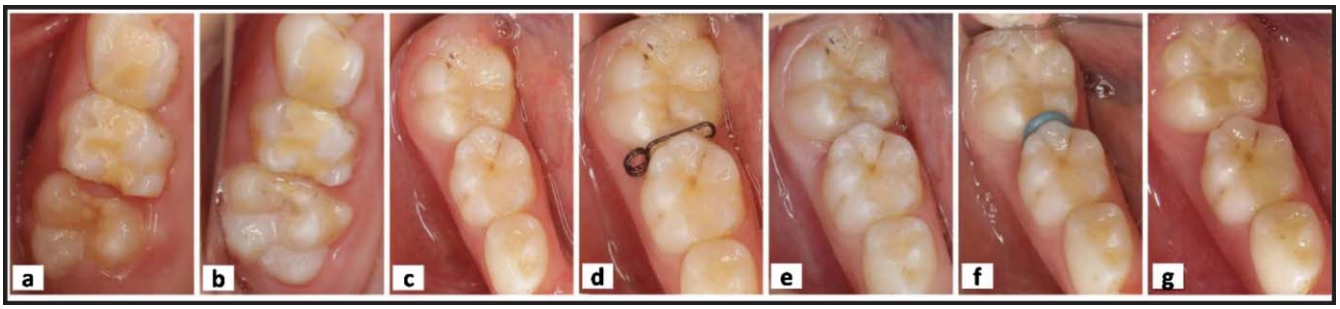

Figure-2: Intraoral photograph showing the eruption of permanent maxillary and mandibular right first molar. 2a, 16 was visible at the second 3-month follow-up. 2b, 16 erupted into the oral cavity at the third 3-month follow-up, and pit-and-fissure sealing was done. 2c, preoperative intraoral photograph showing the mesially inclination of 46. 2d, separating springs was placed in the contact areas of entrapment. 2e, pit and fissure caries was found on the occlusal surface of 46. 2f, elastic separator was placed to facilitate distal movement of 46. 2g, 46 erupted into the normal position.

extraction.

As for permanent maxillary right first molar, no eruption was visible during the following three months observation. Three millimetre thick tooth structures at the distal surface of the primary maxillary right second molars were removed to create space for the eruption of permanent maxillary right first molars. The patient returned to the clinic every three months. The tooth was visible at the second three-month follow-up (Figure-2a) and erupted into the oral cavity at the third three-month follow-up, and pit-and-fissure sealing was done (Figure-2b). The primary maxillary right second molar was firm.

As for the permanent mandibular right first molar, an observation approach of "watchful waiting" for six months was planned and the patient came to the hospital every three months. However, no occlusal migration of the permanent mandibular right first molar was noted (Figure-2c). Separating springs were placed in the contact areas of entrapment to free permanent mandibular right first molar (Figure-2d). The patient visited our clinic one week later. The mesial displacement of permanent mandibular right first molar ameliorated a little. Unfortunately, pit and fissure caries were found on the occlusal surface of the permanent mandibular right first molar (Figure-2e). Preventive resin restoration was done for the permanent mandibular right first molar. Elastic separator was placed to facilitate distal movement of the permanent mandibular right first molar at this and the following appointment (Figure-2f). The whole procedure lasted for 38 days and the permanent mandibular right first molar erupted into normal position at the fourth visit (Figure-2g).

Discussion

More than two thirds of EE can self-correct spontaneously.[3,4] The magnitude of impaction of the permanent maxillary first molars and grades of the root resorption of the primary second molars are grading systems commonly used to evaluate whether the EE is of reversible type or irreversible type.[3,4] Dabbagh B found that the magnitude of impaction was significantly correlated to IRR, illustrating that the odds of irreversible eruption of EE increased with 1mm increase in the magnitude of impaction and higher than 2.25mm impaction would lead to IRR.[4]

It is suggested that interceptive treatment should be taken to manage EE if the child approaches seven years of age, since self-correction is unlikely to happen, or the opposing molar erupts into its proper vertical position for the purpose of avoiding the underlying occlusal interference due to supraeruption.[1] A recent cohort study showed that 71 percent of the EEs self-corrected by the age of nine. However, five primary second molars were extracted after the eruption of the permanent maxillary first molar but before the time of normal exfoliation in the SC group. And space loss was observed in 95 percent in the IRR group.[4] One goal of oral health management for children is to minimise the unwanted effect of these diseases on dentition.[5] So early diagnosis and timely intervention of EEs are necessary to maintain the integrity of dental arch rather than waiting until the premature loss of the primary second molars is caused by the eruption of permanent first molars.

An observation period of three to six months with careful monitoring is advised to see whether the EEs can erupt spontaneously.[6] Interproximal wedging with orthodontic separators, brass ligature wire or triangular wedging spring for minor impaction and distal tipping of the ectopic molar with elastic chains or orthodontic loops for severe cases have been mentioned in different reports.[1,6-8] Removing the tooth structure of the second molars is indicated for these impacted permanent first molars, which are not available in the oral cavity. Surgical exposure and distal traction are necessary if the impacted

permanent first molars remain locked.[9] In this patient, the permanent right molars erupted into the normal alignment after interception. The occlusal surface of the permanent mandibular right first molar inclined mesially, forming a triangular gap with the distal surface of the primary second molar. Food debris tended to retain and more biofilm were accumulated in this area, increasing the frequency of dental caries.[10] Pit and fissure sealing on the impacted first molars should be done during the observation period to decrease the possibility of dental caries. No force could be applied on the invisible permanent maxillary first molar. Slicing the distal surface of the primary maxillary second molar was tried to remove the resistance. No pulp exposure was caused during the process of slicing and the tooth remained stable after the eruption of the permanent maxillary first molar. The impacted permanent maxillary first molar erupted into the oral cavity successfully; hence surgical exposure and distal traction of the impacted tooth were avoided. There was some mesial movement of the permanent maxillary first molar and space loss. Space inadequacy was obvious in the mandible, and further interceptive treatment was needed for this patient. So, moving the permanent maxillary first molar distally could not be implemented during this period.

Conclusion

This case report illustrates three methods used to treat EE of permanent first molar, that is, observation, distalizing the first permanent maxillary molar with separators, and removing the tooth structure of the adjacent second primary molars. Appropriate treatment of EE should be given according to clinical features. EE of permanent first molars may cause many local disturbances, such as dental caries shown in this case report. Regular examination and timely interception are of great significance in alleviating the side effects of EE.

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Conflict of Interest: None to declare.

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References

1. Dean JA. McDonald and Avery'S dentistry for the child and adolescent. 10th ed. Missouri: Mosby Elesevier, 2016.
2. No Authors. Management of the Developing Dentition and Occlusion in Paediatric Dentistry. Pediatr Dent. 2017; 39:334-47.
3. Barberia-Leache E, Suarez-Clúa MC, Saavedra-Ontiveros D. Ectopic eruption of the maxillary first permanent molar: characteristics and occurrence in growing children. Angle Orthod. 2005; 75:610-5.
4. Dabbagh B, Sigal MJ, Tompson BD, Titley K, Andrews P. Ectopic Eruption of the Permanent Maxillary First Molar: Predictive Factors for Irreversible Outcome. Pediatr Dent. 2017; 39:215-8.
5. Zou J, Meng M, Law CS, Rao Y, Zhou X. Common dental diseases in children and malocclusion. Int J Oral Sci. 2018; 10:7.
6. Ambriss B, Moukarzel C, Noueiri B. Management of Bilateral Ectopically Erupting Maxillary Molars: A Case Report. Int J Clin Pediatr Dent. 2019; 12:153-6.
7. Kim YH, Park KT. Simple Treatment of Ectopic Eruption With a Triangular Wedging Spring. Pediatr Dent. 2005; 27:143-5.
8. Nam OH, Ahn HJ, Kim MS, Park JH. Treatment of Ectopic Permanent Maxillary First Molar Using a K-loop. J Clin Pediatr Dent. 2015; 39:387-91.
9. Ho CLJ, Lee YCJ, Chiang CP, Lee MS. Halterman Appliance Used for Uprighting Ectopically Erupted Bilateral Permanent Mandibular First Molars. J Dent Sci. 2019; 14:206-8.
10. Luciana P, Laura Guimaraes P, Denise N. Ectopic eruption of the maxillary central permanent incisors and mandibular first permanent molars: Report of an unusual case. Quintessence Int. 2006; 37:677-83.