Rootless and prematurely erupted tooth: A case report

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ABSTRACT

Tooth eruption is defined as the movement of a tooth from its site of development within the alveolar process to its functional position in the oral cavity. It is a complex process that can be influenced by a number of general factors like genetics, nutrition, preterm birth, socioeconomic factors, hormonal factors, various systemic diseases and some local factors. Timing of tooth eruption depends on the chronologic age. Marked deviation in eruption timing and developmental stage at which tooth erupts may confuse a clinician and affect the treatment planning so knowledge of such cases helps in delivering proper treatment. This article reports a case where eruption of rootless premolar is seen in a child of 7 year of age.

Keywords: Eruption, premolar, rootless tooth

Tooth eruption is defined as the movement of a tooth from its site of development within the alveolar process to its functional position in the oral cavity. It is a complex process that can be influenced by a number of factors. Timing of tooth eruption depends on the chronologic age. Marked deviation in eruption timing and developmental stage at which tooth erupts may confuse a clinician and affect the treatment planning so knowledge of such cases helps in delivering proper treatment. This article reports a case where eruption of rootless premolar is seen in a child of 7 year of age.

The mechanism of tooth eruption is not fully understood. Numerous theories for tooth eruption have been proposed among these; root elongation, alveolar bone remodeling, and to some extent, the formation of the PDL, provides the most plausible explanation for tooth eruption in human beings. At present, the most accepted theory suggests that the eruption process consists largely of the local regulation of alveolar bone metabolism to produce resorption in the direction of eruption and shift and formation of bone at the opposite side. During this process, the dental follicle, a loose connective tissue sac surrounding the enamel organ of each tooth, is thought to play a pivotal role in recruiting osteoclasts and osteoblasts in a polarized pattern. A series of elegant experiments conducted by Cahill and Marks helped to decipher the role of the dental follicle during tooth eruption. They showed that removal of the dental follicle from developing premolars of dogs prevented tooth eruption. More dramatically, if the dental follicle was left intact and the tooth germ was removed and replaced with a metal or silicone replica, the artificial tooth still erupted on schedule, with the formation of a normal eruption pathway in the overlying bone and trabecular bone at the base of the bony crypt.

Although tooth normally erupts during a specified time frame, it is a complex process that can be influenced by a number of factors such as genetics, nutrition, preterm birth, socioeconomic factors, body height and weight, craniofacial morphology, hormonal factors, and various systemic diseases. Generalized premature eruption is seen in patients with hyperthyroidism, hypophosphatasia, cherubism, and cyclic neutropenia. Premature eruption of permanent teeth without any systemic condition has also been reported. Early eruption of permanent teeth could be...
due to premature loss of primary teeth if the loss occurs within 1 year before the eruption. However, if the extraction is done at a very young age, the eruption of teeth is delayed. A strong correlation has also been shown between eruption time and dental maturity. Teeth normally erupt when they have reached 2/3 root length. Morphology of developing tooth is affected by environmental factors like radiation, chemotherapy, trauma, and hereditary condition like Dentin dysplasia.

Although rootless eruption of teeth is very rare, few cases of rootless eruption of premolars have been reported by Kalra. Moreover, tooth showing signs of the eruption as early as 5 years of age have been reported by Mc Namara et al. but fully erupted premolar at the age of 7 is very rare. This article reports a rare case of rootless premolar erupted at the age of 7 years.

**Case**

A 7-year-old male reported to the Department of Pedodontics and Preventive Dentistry, Dr. R Ahmed Dental College and Hospital with the chief complain of pain in the lower right posterior tooth. On examination grossly decayed 85 was seen and erupted 44 was seen. IOPA X-ray of 85 revealed retained roots stumps of 85 with signs of periapical inflammation. The presence of a tooth bud of 45 was seen apical to the roots of 85. Crown formation of 45 was almost complete but root formation had not yet started. In addition, 44 fully erupted but no sign of root formation was seen. Clinically, no sign of mobility was seen in 44. The patient gave a history of intraoral swelling and pus discharge in 44 regions and shedding of the tooth a few months back.

Discussion: Rootless teeth are seen in cases with dentin dysplasia and localized odontodysplasia. In dentin dysplasia the condition is generalized and teeth are characterized by pulpal obliteration, normal eruption, multiple periapical radiolucenties, and early exfoliation. In localized odontodysplasia, teeth demonstrate a lack of healthy dental tissues. However, in this case, enamel and dentin were healthy and the condition was localized. The possible explanation as seen from the oral health status of a child could be that the tooth erupted prematurely due to inflammation in overlying bone probably due to decayed primary tooth. Camm and Shuler noted very early eruption of premolar in 5-6-year-old following early loss of abscessed primary molars. In these cases, erupted premolars showed mobility. Mulia et al. have stated that the rate of root resorption of the primary teeth affects the eruption rate but not the growth of the permanent teeth. Moreover, the acceleration of eruption occurs if there is extensive alveolar bone damage due to chronic inflammation originating from the primary teeth.

Thus, as seen in this condition, the tooth erupted prematurely but root was not formed.

Unusual finding in this case as compared to other similar cases is the absence of abnormal mobility in spite of the absence of roots. A tooth crown can erupt independent of its root development and subsequently continue its root development independent from the progenitor tissue complex of the dental papilla. Since there was no abnormal mobility noted in this case, the decision to retain the tooth was made and the patient was kept on regular follow-up.
Deviation in eruption timing from normal is usually seen but marked deviation from the normal trend may confuse a clinician and affect the treatment planning if not dealt with proper care. Since such cases are usually associated with systemic conditions, knowledge of such a case where no systemic abnormality is seen can help the clinician in proper diagnosis and thereby deliver appropriate treatment.

**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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