

Ankylosis of primary molar along with congenitally missing first permanent molar

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Abstract

Ankylosis of primary mandibular molars has been routinely found to be associated with various developmental disturbances in permanent dentition such as aplasia of the succedaneous tooth, ectopic eruption of the premolar, infraocclusion of the ankylosed tooth leading to tipping of the first permanent molar etc. This article describes a rare case where there was ankylosis of a mandibular second primary molar along with congenitally missing first permanent molar which resulted in the transposition of second premolar. Treatment options and prognosis of the case are discussed.

Key words: Congenitally missing teeth, tooth ankylosis, transposition

Introduction

Ankylosis is an anomaly where there is fusion of alveolar bone with cementum and / or dentin, which occurs either before or after tooth eruption.^[1] It occurs more commonly in molars, particularly mandibular second primary molar, while the incidence of ankylosis of primary molars is between 1.3 to 38.5 percent.^[2,3] The exact cause of ankylosis is still unknown, although factors like genetic tendency, traumatic injury to the bone and periodontal ligament, deficient local vertical bone growth, disturbance in local metabolism and local inflammation have been suggested.^[3,4]

Clinically, ankylosed primary molars often present with infraocclusion, as due to ankylosis the primary molars remain in fixed occlusal level while the neighbouring teeth erupt continuously due to vertical growth of alveolar bone. Hence, some other names attributed to this clinical condition are submerision, secondary retention and hypotrusion.^[5] On percussion a sharp, solid sound is heard which is characteristic of ankylosis but this observation can be subjective.^[4]

Radiographically, obliteration of the periodontal ligament space is noted. The roots are less radio opaque and as the ankylosis progresses, they are less distinguished from surrounding bone.^[3] Histologically, areas of fusion of cementum and bone, periodontal ligament remnants which is fibrotic, with very few cells has been observed. No mucopolysaccharidase activity which is essential for normal process of root resorption during eruption of permanent successor is seen.^[3,6]

Ankylosis of primary molars has been reported to be associated with various anomalies in permanent dentition, like taurodontism of the first permanent molar, impaction of suc-

cedaneous tooth, ectopic eruption of premolars / canine, aplasia of second molars, tipping of the adjacent teeth and increased susceptibility to caries and periodontal disease.^[7,8] Here is a report of a case with ankylosis of the second primary molar associated with congenitally missing first permanent molar and transposition of premolar.

Case Report

A healthy 14 year old female patient reported to the Department of Pedodontics, Manipal College of Dental Sciences, for routine checkup. On Oral examination the following teeth were present:

17, 16, 15, 14, 13, 12, 11, 21, 22, 23, 24, 25, 26, 27
47, 46, 45, 44, 43, 42, 41, 31, 32, 33, 34, 75, 35, 37

75 was over retained, 35 had erupted distal to 75 and was well aligned in the arch. Curiously the first permanent molar (36) was missing, for which there was no history of previous extraction. The over retained deciduous molar appeared to be stable with a class I occlusal pit cavity and revealed no signs of infraocclusion [Figures 1, 2 and 3]. Radiographic examination revealed gross resorption of the distal root while the mesial root appeared healthy. There was obliteration of periodontal ligament space around the mesial root [Figure 4].

As the teeth were well aligned and there was no sign of infraocclusion, it was decided to keep the patient under observation. Hence, the class I occlusal pit cavity on 75 was restored with glass ionomer cement.

Discussion

The occurrence of a congenitally missing first permanent molar is a rare finding as the common congenitally missing permanent teeth in the order of frequency are third molars, second premolars and lateral incisors.^[10]

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Figure 1: Photograph showing presence of over retained molar and transposed premolar



Figure 3: Photograph of the casts in occlusion



Figure 2: Photograph showing 75 with no sign of infraocclusion

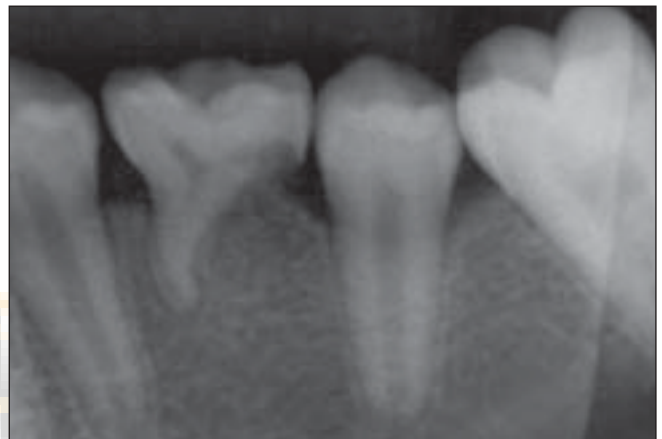


Figure 4: Radiograph showing over retained 75 along with congenitally missing 36

Due to the congenital absence of 36, the tooth germ of 35 had probably drifted distally and erupted distal to 75 causing resorption of distal root of the over retained molar in the process.^[11,12] This is an extreme case of ectopic eruption wherein, a tooth erupts normally in a position occupied by another tooth and may be termed as transposition.^[13]

Transposition of teeth is less common in mandibular arch compared to maxillary arch. So far only mandibular incisor – canine transpositions have been reported.^[14] This is a unique case where the second premolar has erupted in place of congenitally missing first permanent molar. The most common cause for change in the normal eruptive pattern in the mandibular arch is over-retained deciduous teeth. Positional changes of the anlagen at very early stages of odontogenesis as well as genetic control within the dental follicle are suggested as possible causative factors of tooth transposition.^[15]

The prognosis of ankylosed teeth has been found to be unpredictable.^[16,17] Extensive root resorption due to pressure from erupting adjacent tooth irrespective of whether the successor tooth is present or not has been reported. But significantly the

rate of such resorption is slow.^[18] In a fifteen year follow up study, Hansen and Kjaer^[16] have concluded that when there are no morphological abnormalities in the rest of the permanent dentition, the ankylosed primary molar persists for at least fifteen years from its normal exfoliation time. In another longitudinal study Bjerklin and Bennett^[17] found that if the primary molars persists upto twenty years of age, prognosis is good. Hence, in cases with agenesis of permanent teeth, it is inadvisable to extract the ankylosed primary molar, when there is no associated crowding of teeth. Though there is a risk of infraocclusion and tipping of adjacent teeth, it has been found to be clinically insignificant.^[17] Also, in cases of transposition of teeth, usually the transposed order should be retained, as it has been shown that attempts at restoring the natural tooth position may lead to prolonged orthodontic treatment with less than adequate results, biologically and esthetically.^[19]

In some cases, spontaneous eruption of the ankylosed teeth may occur due to resorption of localized areas of ankylosis.^[20] This maybe the possible reason for absence of infraocclusion in the present case. As there was no associated infraocclusion at present and the tooth was well aligned at time of examina-

tion, no treatment was initiated. It was decided that the patient should be kept under observation considering the risk of progressive root resorption and infraocclusion of 75. At 1 year follow up examination no signs of infraocclusion nor mobility was noted. Radiographic examination for further evidence of root resorption remained negative. Further long term follow up for at least 10 years is needed, to rule out occurrence of infraocclusion and progressive root resorption.

If progressive root resorption occurs resulting in a mobile primary molar, extraction and replacement with autotransplanted upper third molar or by a resin bonded bridge should be done. If only infraocclusion develops, restoration of the ankylosed tooth with resin bonded onlays or resin bonded porcelain crowns are the treatment options that can be considered.^[17]

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