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Case report of retained deciduous 2nd molars in an adult patient having congenitally missing mandibular 2nd premolars

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***Abstract*---**Hypodontia is sometimes observed in adult patients and is frequently associated with missing 3rd molars. However, it can also involve other teeth such as canines, lateral incisors and premolars. In this case report, we describe a case of an adult patient having bilaterally missing mandibular second premolars and instead, presence of retained deciduous 2nd molars. Also, a possible insight into the etiology of retained deciduous teeth is discussed.

***Keywords*---**hypodontia, retained deciduous teeth, adult patient.

Introduction

As evolution is proceeding, we are seeing smaller jaws than our ancestors, probably as an adaptation to our diet changing to more refined and processed foods. In such instances, it is not uncommon to encounter missing teeth. The third molars are the most commonly missing teeth, followed by premolars. It is also general observation that in individuals who have a complete dentition, the third molars are frequently impacted for lack eruption space, and often have to be surgically extracted. Incidentally, during orthodontic treatment, the premolars are commonly extracted in order to make space for the proper alignment of the remaining teeth. The justification for this line of treatment is often sited that the premolars are the least functional teeth, the canines being required for a stable

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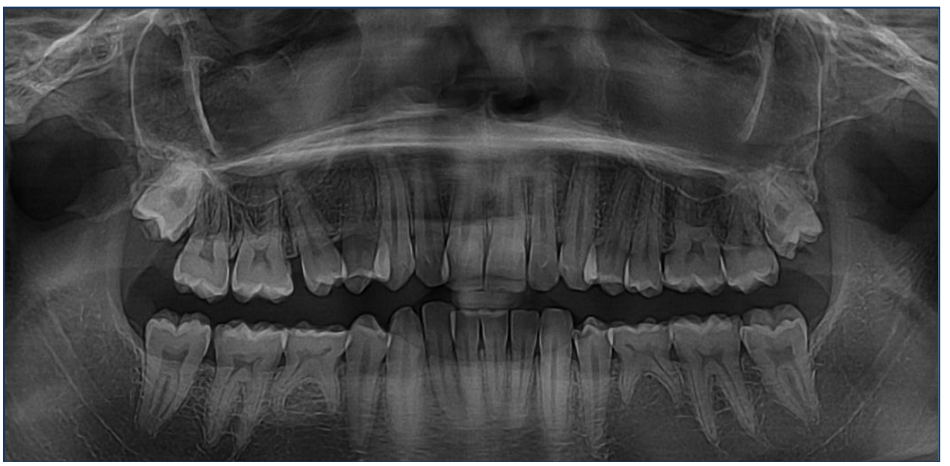
occlusion, and the molars required for mastication. It is intriguing to consider how nature understands the needs of the body, and after third molars, the premolars are the most commonly congenitally missing teeth.

However, there could be a possibility wherein instead of permanent teeth, deciduous teeth are retained so that overall function is not affected. This also depicts the adaptability of the dentition. Moreover, a lack of eruptive force from the underlying permanent successor would also contribute to the retained deciduous tooth. Such a case is discussed in this report wherein the mandibular 2nd permanent premolars are congenitally missing bilaterally, and deciduous 2nd molars are over retained in an adult male along with missing mandibular 3rd molars. Tooth agenesis is regarded as the most common developmental anomaly of human dentition , occurring in 25% of the population.[1] The third molar represents the tooth most affected with agenesis[23], having a prevalence rate of 20.7%. As opposed to it, permanent second molar is rare occurrence, found only in 2 of 6000 consecutive orthodontic patients.(0.03%)[4].

Case Report

A 21 year old male patient reported to department of Oral medicine and diagnostic Radiology with chief complaint of tilted lower back teeth. The patient was moderately built and well nourished. Physical development of this patient was under normal range.

Extra oral examination of this patient was normal. On intra oral examination, mild staining was observed. Further, 11,12,13,14,15,16,17,18 and 21,22,23,24,25,26,27,28 were present in maxilla and 31,32,33,34,65, 36,37,38 and 41,42,43,44,75,46,47,48 were present. Interestingly, on both sides, permanent mandibular 2nd premolars were absent and instead, retained deciduous mandibular 2nd molar was present and permanent mandibular 2nd molars were tilted. Patient was advised an OPG. Crown size of all the teeth was found to be normal. There was no midline deviation and overjet was1.8 and overbite was 2 mm.



Retained E with Congenitally missing mandibular 2nd premolars and 3rd molars

Laboratory tests for T3, T4, Free T4, TSH, Alkaline phosphatise, Ca and Phosphatase were found to be normal.

Discussion

A tooth may be considered congenitally missing when it cannot be seen clinically and radiographically and there is no associated history of its extraction. A congenitally missing tooth has multifactoial etiology that combines genetic and environmental factors. Hereditary and familial distribution has been suggested as the primary cause[5]. MSX1 and PAX 9 mutations leads to disturbances in tooth development in the cap and or /bud stages of dental development as they are expressed in this period of dental development.

A Heterogenous mutation in MSX1 and PAX 9 in humans leads to agenesis of teeth, mostly in the posterior area. Lack of wisdom teeth is due to a mutation in PAX 9 gene whereas lack of premolars and molars is due to a mutation in MSX1 gene.(6,7,8,9). Vastardis in 2000 conducted a study on a large family with agenesis of all premolars and 3rd molars and detected a mutation in MSX gene on chromosome 4p[10].

Pierre Robin Syndrome has traid of symptoms consisting of congenital micrognathia, cleft of secondary palate, and glossoptosis with upper airway obstruction. Besides these 3 characteristics, other defects might be observed including dental abnormalities, particularly Hypodontia which is most frequently found in mandibular second premolars.11Hypodontia in this region accentuates mandibular undergrowth, as loss of tooth buds is a factor of bone underdevelopment in this area12.

Another disorder, known as Wolf- Hirschhorn Syndrome or chromosome microdeletion 4p syndrome or Dillian Syndrome is a rare congenital disorder is commonly found in women. It is most frequently associated with with a deletion within the 4p16.3 Chromosome region, which encodes for the MSX1 gene.(13,14,15,16,17) here, the affected children suffer from multiple disorders, which include a developmental delay and high mortality range of 30%. Amongst the dental abnormalities, multiple tooth agenesis is observed and affects premolars and molars mainly and is associated with MSX1 mutation. (18-22).According to Kjaer et al, the agenesis of permanent tooth could be caused by factors that are related either to mucosal ectoderm, ectomesenchyme or innervation. 23

Summing up, MSX1 is an important gene expressed in dental mesenchyme and its mutations may lead to developmental disorders including tooth agenesis. Its mutation is also involved in Pierre-Robin Syndrome and Wolf- Hirschhorn Syndrome. So, this gene should be carefully looked into in cases of tooth agenesis as other developmental defects might also be present along with congenitally missing teeth.

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