

Case Report



Agenesis of Bilateral Permanent Mandibular Canine in a Non-Syndromic Child: A Rare Case Report

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Abstract

Background: Agenesis is one of the most common anomalies frequently affecting permanent dentition. The most common congenital missing teeth are reported to be the permanent maxillary lateral incisors and permanent maxillary and mandibular second premolars.

Case: An eleven-year-old female child reported with clinically missing permanent mandibular canines bilaterally and inadequate arch space for accommodating the permanent dentition. Radiographic evaluation confirmed their congenital absence and rules out any associated pathologies.

Conclusion: Early diagnosis of missing or unerupted teeth should be assessed once the child reaches chronological age. One congenital agenesis is confirmed radiographically; diligent space management should be carried out till the child reaches the late teenage to optimize transition into adult dentition.

Keywords: Congenital Missing; Permanent Mandibular Canine; Non -Syndromic

Introduction

Agenesis is one of the most common developmental dental anomalies affecting permanent dentition more frequently than primary. Reportedly the most commonly missing permanent teeth are the mandibular second premolar, maxillary lateral incisors and maxillary second premolars, depending on the population studied [1,2]. The prevalence of

agenesis of permanent maxillary canine ranges between 0.07% to 0.13% [3]. The congenital absence of bilateral permanent mandibular canine is extremely rare, with only two non-syndromic cases having been reported till date. The permanent mandibular canine agenesis occurs occasionally in concurrence with the agenesis of other teeth or with other developmental tooth anomalies [2].

Case Report

A 11-year old female child reported to our clinic with the chief complaint of irregularly erupted teeth. On intraoral clinical examination, the child had bilaterally missing permanent mandibular canines and first premolars with inadequate mesio-distal width for their eruption. The alveolar mucosa over this region appeared sound with no signs of tooth eruption (Fig. 1). The patient reported no history of trauma, extraction or any pathological changes in her pre- and post-natal life. The child's mother had no history of radiation exposure or long-term medication during her gestational period. The patient's siblings, parents and relatives were apparently healthy with no history of tooth agenesis or other dental abnormalities. A subsequent panoramic radiograph revealed congenitally missing permanent mandibular canines bilaterally (Fig. 2). The bony trabecular pattern appeared normal with no aberration in the regions of the missing canines. A lingual arch appliance was fabricated and placed to maintain the width for the erupting mandibular first premolars. Further, corrective orthodontics for management of any arch

discrepancy resulting from the bilaterally missing permanent mandibular canines will be planned once the inter-transitional stage completes. The final prosthodontic rehabilitation if required will also be planned. The rehabilitative possibilities and the need for regular follow-up were explained to the parents.



Figure 1: Bilateral missing permanent mandibular canine.



Figure 2: Panoramic X-ray showing the congenital agenesis of permanent mandibular canines bilaterally.

Discussion

Various etiologies have been associated with missing permanent canines including hereditary, environmental, genetic, syndromic, perinatal infection, endocrine disorders, radiation exposures, localized disturbances during the tooth development [3]. But there is no conclusive evidence explaining agenesis in a non-syndromic patient. Recent studies have suggested the association of agenesis of maxillary permanent canine with mutations in the WNT10A gene following an autosomal dominant inheritance pattern [4]. Agenesis of maxillary permanent canine may be accompanied with microdontia or dens invaginatus of the maxillary lateral incisors [4]. García-Marín C, et al., analyzed the genetic variation in CTNNA1 gene of patients with agenesis of permanent mandibular canine; however, no differences of genotyping were found between the affected patient and unaffected family members [2]. The other possible aetiologies hypothesized are defects of supporting cartilage or a developmental failure of the inferior alveolar nerve's extension till the affected mandibular canine region [5]. Current evidence thus illustrates that canine agenesis in a non-syndromic patient may be attributed to polygenic traits and has a multifactorial aetiology.

Bullet Points

- Non-syndromic agenesis of bilateral mandibular canine is an extremely rare condition usually associated with other dental anomalies. However, in our case other dental anomalies were absent

- Research directed towards finding the genetic root of mandibular canine agenesis has thus been inconclusive
- Further research towards detecting the network underlying each type of tooth agenesis mechanism is needed

Conclusion

A clinical diagnosis of missing or unerupted teeth should be looked into once the child reaches the chronological age of expected eruption. If congenital agenesis is detected radiographically, timely space management should be carried out till the child reaches the age to undergo definitive fixed prosthodontic rehabilitation like dental implants.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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Data Availability Statement

Not applicable.

Ethical Statement

The project did not meet the definition of human subject research under the purview of the IRB according to federal regulations and therefore, was exempt.

Informed Consent Statement

Informed consent was taken for this study.

Authors' Contributions

Raja Raghu was involved in patient care, treatment plan and in construction of the manuscript; Mrinalini Rathore was involved in the construction and final review of the manuscript; Gursimarjit Singh Chhatwal was involved in the treatment plan and final review of the manuscript; Anju Singh Rajwar was involved in the construction and final review of the manuscript.

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