

Case Report

Agensis of permanent canines: Rare case report

Sumit Kumar Yadav¹, Achla Bharti Yadav², Neal Bharat Kedia³, Abhinav Kumar Singh⁴

¹Department of Orthodontics and Dentofacial Orthopedics, Mithila Minority Dental College and Hospital, Darbhanga, Bihar, ²Department of Oral Pathology and Microbiology, Postgraduate Institute of Dental Sciences, Rohtak, Haryana, Departments of ³Orthodontics and Dentofacial Orthopedics, Rohtak, Haryana, India, and ⁴Conservative Dentistry and Endodontics, Buddha Institute of Dental Sciences and Research, Patna, Bihar, India

ABSTRACT

Agensis of permanent canines is a rare condition, and that of both maxillary and mandibular permanent canines is extremely rare. It may occur either isolated or in association with other dental anomalies. Reports of such cases are very scarce in the literature. Need for early diagnosis of such conditions should be emphasized because of functional, esthetic, and psychological problems which should be evaluated and treated appropriately. The present paper presents a report of bilaterally missing permanent maxillary and mandibular canines. This case might contribute in the future studies of incidence of agensis of permanent canines.

Key Words: Agensis, canine, incidence, permanent

Received: December 2016
Accepted: May 2017

Address for correspondence:
Dr. Achla Bharti Yadav,
House No. 604, FF,
Omaxe Happy Homes,
Rohtak, Haryana, India.
E-mail: drachlabharti@
gmail.com

INTRODUCTION

Abnormalities in the differentiation of the dental lamina and the tooth germs (morphodifferentiation) will result in various anomalies related to number, size, and form of teeth. The congenital absence of teeth may be referred to as hypodontia when one or several teeth are missing.^[1] The prevalence of congenitally missing tooth/hypodontia varies from 0.2% to 16.2% in Asians.^[2] The most frequently missing teeth are the third molars, upper lateral incisors, second premolars, and lower central incisors.^[3] Hypodontia may be symmetrical when particular teeth or groups of teeth are involved or haphazard when no pattern is discernible. Agensis of permanent canines is very rare and the incidence varies from 0.18% to 0.45% as reported in the populations of Japan, Hungary, and Hong kong.^[4-6] Other dental anomalies, i.e., agensis of other teeth, microdontia, malocclusion, and retained primary teeth might be associated with congenitally

missing permanent canines.^[5] Reports of congenital agensis of permanent canines in both arches are scarce. This article describes a rare case of congenital agensis of all permanent canines along with the absence of mandibular permanent lateral incisors.

CASE REPORT

A 12-year-old boy reported to the Private Clinic in Rohtak (Haryana) with the chief complaint of missing teeth and irregularly placed upper and lower front teeth [Figure 1]. Although his medical history was noncontributory, it was the first visit to a dentist. On intraoral examination, the patient had early mixed dentition, with four erupted permanent first molars, maxillary central and lateral incisors, maxillary right first premolar, maxillary left first and second premolars with two central mandibular incisors. The maxillary canines, mandibular canines, and mandibular lateral

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Yadav SK, Yadav AB, Kedia NB, Singh AK. Agensis of permanent canines: Rare case report. Dent Res J 2017;14:359-62.

Access this article online	
	<p>Website: www.drj.ir www.drjjournal.net www.ncbi.nlm.nih.gov/pmc/journals/1480</p>

incisors were absent as can be seen in his upper and lower dental arch photograph [Figure 2]. There was evidence of caries on lower deciduous molars. On panoramic radiograph, the primary maxillary and mandibular canines were missing and also there was no evidence of developing permanent maxillary and mandibular canines [Figure 3].

Extraoral examination revealed no abnormalities of the skin, hair, or nails [Figure 4]. The patient was referred to a pediatrician to rule out any associated syndromes or any systemic disorders for which detailed examination was done and patient did not show any physical or skeletal abnormality. The ophthalmological, dermatological, and neurological examination revealed no pathological symptoms and showed no signs of mental retardation. There was no relevant family history for this condition.

Based on the above findings, the case was finally diagnosed as congenital agenesis of permanent canines. However, the genetic evaluations could not be performed due to financial constraints.



Figure 1: Clinical photograph (front view) showing oligodontia.



Figure 2: Clinical photograph: (a) maxillary and (b) mandibular occlusal view.

DISCUSSION

Disorders of development of teeth may be prenatal or postnatal in origin and may be inherited or acquired. Their recognition and evaluation require a thorough knowledge of the normal development and chronology of the human dentition. Tooth agenesis or hypodontia is one of the most common anomalies of the human dentition, which is characterized by the developmental absence of one or more teeth. Congenitally missing teeth is a result of disturbances during the early stages of development. Severe hypodontia is usually associated with genetic disorders such as Witkop syndrome, ectodermal dysplasia, and Rieger syndrome. Mild to moderate hypodontia may occur due to early irradiation of tooth germs, various kinds of trauma of the dental region, Down syndrome, and syndromes associated with cleft lip or palate.^[7] The etiology of tooth agenesis has generated much debate. It supposed to be multifactorial involving several factors such as genetics; environment; or combination of environmental and genetic factors might contribute to the occurrence of dental agenesis. Furthermore, it is suggested that anterior agenesis may depend more on genes while posterior missing might be sporadic. The exact genetic mechanism is still not



Figure 3: Panoramic radiograph showing congenitally missing maxillary permanent canines (bilateral), mandibular permanent canines (bilateral), and mandibular lateral incisors (bilateral).

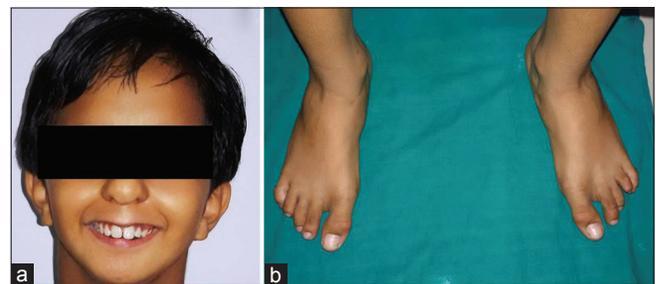


Figure 4: Extraoral picture showing normal appearance of hair (a) and nails (b).

Table 1: Detailed description pertaining to cases of missing canines from the literature

Author	Location	Missing canine	Deciduous/permanent	Unilateral/bilateral Maxillary/mandibular
Ramaraj and Mirza ^[10]	Bahrain	33, 43	Permanent	Bilateral - mandibular
Leong and Calache ^[11]	Australia	13, 23	Permanent	Bilateral - maxillary
Lombardo <i>et al.</i> ^[12]	Italy	13, 23	Permanent	Bilateral - maxillary
Shekhar <i>et al.</i> ^[13]	Indian	13, 23, 43	-do-	Bilateral - maxillary Unilateral - mandibular (right)
Arora ^[3]	Indian	13, 23, 33, 43	Permanent	Bilateral - maxillary and mandibular
Koç <i>et al.</i> ^[7]	Turkey	13	Permanent	Unilateral - maxillary (right)
Birnboim-Blau <i>et al.</i> ^[14]	Israel	73, 83	Deciduous	Bilateral - mandibular
Kambalimath <i>et al.</i> ^[15]	Indian	13, 23	Permanent	Bilateral - maxillary
Kohli <i>et al.</i> ^[16]	Indian	33, 43	Permanent	Bilateral - mandibular

known. Separate mechanisms might as well account for missing of each tooth.^[2,7]

Recent reports have shown that in the Caucasian population, the prevalence of hypodontia in permanent dentition (third molar excluded) is about 4.5%–7.4%. The developmental absence of permanent canines is reported to be higher in women and mostly maxilla affected with the left side.^[7] Agenesis of both maxillary and mandibular permanent canines is extremely rare. Reports of such cases are very scarce in the literature. Fukuta *et al.*^[4] recorded thirty-seven cases with single absence of the canine and 28 cases of multiple absences in Japanese population. Rózsa *et al.* reported thirteen participants with permanent canine agenesis; permanent maxillary canine agenesis was found in nine patients, mandibular canine agenesis in four, and in three, both arches were involved in Hungarian population.^[5] In the Chinese population, Cho *et al.* described the 32 cases of congenitally missing permanent teeth regarding only maxillary canines, among which only nine were bilaterally missing.^[8] However, agenesis is very rare in the Caucasian population, Muller *et al.* reported 0.037% prevalence among American children whereas 0.14% in black children.^[9] Detailed description pertaining to cases of missing canines from the literature is summarized in Table 1. The present case demonstrated a complete agenesis of all permanent canines and to the best of our knowledge, this is the second case reported in Indian population.

Hypodontia and oligodontia are classified as isolated or nonsyndromic hypodontia/oligodontia and syndromic hypodontia/oligodontia or hypodontia/oligodontia associated with syndromes. Oligodontia is often associated with specific syndromes and/or severe systemic abnormalities, while anodontia is commonly seen in severe cases of ectodermal dysplasia. Congenital absence of teeth may be due to from physical

obstruction or disruption of the dental lamina, space limitation, and functional abnormalities of the dental epithelium or failure of initiation of the underlying mesenchyme. Characteristic dental symptoms are a reduced number of teeth, a reduction in tooth size, anomalies of tooth form, and delayed eruption.^[17] The past medical history and the family history were not significant in the present case. Extraoral examination revealed no abnormalities of the skin, hair, or nails and there was no abnormality detected on general examination. Therefore, the patient was diagnosed with the congenital absence of permanent canines which could be of nonsyndromic type.

Hypodontia is an anomaly that may result in dental malpositioning, periodontal damage, lack of development of maxillary and mandibular bone height and has significant psychological, esthetic, and functional consequences.^[17] Correct diagnosis and an appropriate treatment strategy of such rare conditions are mandatory to prevent future complications. In addition, this rare case might contribute in the future studies of incidence of agenesis of permanent canines.

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.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors of this manuscript declare that they have no conflicts of interest, real or perceived, financial or non-financial in this article.

REFERENCES

1. Shafer WG, Hine MK, Levy BM. Developmental disturbances of oral and paraoral structures. In: Rajendran R, Sivapathasundharam B, editors. Textbook of Oral Pathology. 6th ed., Ch. 1. India: Elsevier India Pvt. Ltd.; 2009. p. 38-9.
2. Rakhshan V. Congenitally missing teeth (hypodontia): A review of the literature concerning the etiology, prevalence, risk factors, patterns and treatment. *Dent Res J (Isfahan)* 2015;12:1-13.
3. Arora K. A rare nonsyndrome case of complete agenesis of all permanent canines. *Indian J Dent* 2012;3:41-3.
4. Fukuta Y, Totsuka M, Takeda Y, Yamamoto H. Congenital absence of the permanent canines: A clinico-statistical study. *J Oral Sci* 2004;46:247-52.
5. Rózsa N, Nagy K, Vajó Z, Gábris K, Soós A, Alberth M, *et al.* Prevalence and distribution of permanent canine agenesis in dental paediatric and orthodontic patients in Hungary. *Eur J Orthod* 2009;31:374-9.
6. Davis PJ. Hypodontia and hyperdontia of permanent teeth in Hong Kong schoolchildren. *Community Dent Oral Epidemiol* 1987;15:218-20.
7. Koç N, Çağırankaya LB, Akkaya N. Unilateral maxillary canine agenesis: A case report and literature review. *Case Rep Dent* 2014;2014:685014.
8. Cho SY, Lee CK, Chan JC. Congenitally missing maxillary permanent canines: Report of 32 cases from an ethnic Chinese population. *Int J Paediatr Dent* 2004;14:446-50.
9. Muller TP, Hill IN, Peterson AC, Blayney JR. A survey of congenitally missing permanent teeth. *J Am Dent Assoc* 1970;81:101-7.
10. Ramaraj S, Mirza Y. Bilateral congenitally missing mandibular canines with supplementary lower incisor – A case report. *Saudi Dent J* 1995;7:108-9.
11. Leong P, Calache H. Bilateral congenitally missing maxillary canines. A case report. *Aust Dent J* 1999;44:279-82.
12. Lombardo C, Barbato E, Leonardi R. Bilateral maxillary canines agenesis: A case report and a literature review. *Eur J Paediatr Dent* 2007;8:38-41.
13. Shekhar MG, Rao KS, Dutta B. A rare case of congenital absence of permanent canines associated with other dental anomalies. *J Clin Exp Dent* 2011;3:e70-2.
14. Birnboim-Blau G, Spierer S, Keinan D. Congenital bilateral missing primary mandibular canines while their successors exist: A case report. *Dentistry* 2014;4:224.
15. Kambalimath HV, Jain S, Patil RU, Asokan A, Kambalimath D. Permanent maxillary canine agenesis: A rare case report. *Int J Clin Pediatr Dent* 2015;8:242-6.
16. Kohli A, Gupta K, Singh G, Sharma K. Congenitally missing bilateral permanent mandibular canines. *Rama Univ J Dent Sci* 2015;2:29-30.
17. Hiremath MC. Nonsyndromic oligodontia: A rare case report. *Arch Oral Sci Res* 2012;2:103-7.