



Bilateral, Bi-rooted Primary Maxillary Canines: A Case Report

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Abstract

Primary teeth have fewer anomalies compared to the permanent teeth. This paper reports a rare case of bilateral bi-rooted primary maxillary canines. The purpose of this case report is to emphasize the importance of understanding variations in root morphology which requires an assiduous radiographic evaluation for diagnosis and pertinent treatment. Despite the rareness of this condition, all the possible tooth variations should be considered by the clinicians during routine intraoral examinations to facilitate a better treatment outcome and to avoid complications.

Received: Apr 10, 2020

Accepted: May 18, 2020

Published Online: May 20, 2020

Journal: Journal of Radiology and Medical Imaging

Publisher: MedDocs Publishers LLC

Online edition: <http://meddocsonline.org/>

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Keywords: Canine; Maxillary; Bi-Rooted; Developmental; Anomaly

Introduction

The developmental anomalies affecting the morphology of teeth exist in both the primary and permanent dentition. However, anomalies observed and reported in primary teeth are relatively lesser than in the permanent teeth [1]. Primary canines with bifurcated roots are an extremely rare dental condition and the occurrence rate has not been reported [2]. The prevalence of bi-rooted primary canines is higher in the maxilla than in the mandible and they seem to occur bilaterally [3].

This case report describes a case of bilateral, bi-rooted primary maxillary canines in a six-year-old male child of Indian origin. We aim to raise awareness about the morphological variations in primary teeth and the need for careful assessment before endodontic and extraction procedures to avoid potential future complications.



Case report

A six-year-old male patient reported to the Department of Paediatric and Preventive Dentistry of the dental college in New Delhi, India for a routine dental check-up. The child's medical history was unremarkable for trauma, allergies, systemic abnormality or congenital diseases.

The clinical examination revealed age-appropriate fully erupted primary dentition with no anatomic abnormalities. Dental caries was found in tooth numbers 54, 64 (Federation Dentaire Internationale Notation).

Intraoral radiographs demonstrated dental caries involving enamel and dentin in 54, 64 (Figure 1 & 2). Radiographs incidentally revealed bilateral, bi-rooted primary maxillary canines with two distinct roots and the root bifurcation was seen at the coronal third on both the sides. The single-rooted permanent maxillary canines were well-positioned and developing normally. Based on the radiological findings a preliminary diagnosis of bilateral bi-rooted primary maxillary canines was made.

Clinically, the size, shape, and colour of deciduous canines were found to be normal in appearance. The patient had a mesial step molar relationship and class 1 canine relationship on both sides. Also, mandibular canines were found to be single-rooted.

The carious lesions (54 and 64) were restored with type 2 glass ionomer cement. The patient was educated and motivated to maintain good oral hygiene and follow a healthy dietary regime. No treatment was done for double rooted primary canines as the patient had no associated complaints related to them. The patient is kept under careful observation and parents were informed about the rare root anomalies and the need for periodic evaluation of unerupted permanent canines.



Figure 1: Bi rooted Right Primary maxillary Canine

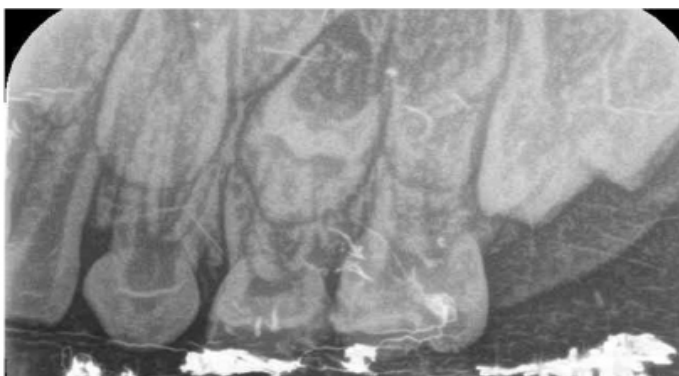


Figure 2: Bi rooted Left Primary maxillary Canine

Discussion

The occurrences of bi-rooted canines are extremely rare in the primary dentition. The prevalence rate has not been reported as this condition is difficult to identify in the routine intraoral examination and the bifurcated roots may resorb and exfoliate without any incident. Hence, Clinician should consider the possibility of bi-rooted primary canines when unusual eruption direction of permanent canines or retained deciduous canines are encountered [4].

The primary maxillary canine tooth germ generally starts its initial calcification at the embryonic age of 17 weeks, while enamel formation is completed by 9 months after birth and root formation by the age of 3 years 3 months [5]. During morpho differentiation, trauma and other disturbances may affect root form and size in later stages [6]. In our case, the mother of the patient had no history of trauma, substance abuse or any other possible issue that could disturb the growth of the foetus. However, the findings of Morrow and Hylin suggested, the possibility of developing a supernumerary root is present throughout the root elongation [7]. Therefore, In the present case, any specific factor could not be ascribed in the aetiology of Bi-rooted primary canines.

In the mechanistic aspect, the ingrown tissue flaps of Hertwig's epithelial root sheath is believed to be the probable origin of bi-rooted primary canines. The mechanism for the normal development of multiple roots is well known but it is poorly understood for supernumerary roots. The proliferation of inner and outer epithelia from the cervical loop of dental organ results in the formation of Hertwig's epithelial root sheath. They contort at the future cemento-enamel junction, creating the epithelial diaphragm. The rim of this sheath encloses the primary apical foramen. An unexplained phenomenon stimulates continuous morpho differentiation in multi-rooted teeth leading to the tongue like projections from the horizontal diaphragm which develop towards each other and fuse. For each new secondary apical foramen, a root will develop [8].

The reported cases till date revealed a tendency of this anomaly to occur bilaterally in the maxillary arch. The prevalence is seen more frequently among black and male children [9,10]. The case reported here affected a six-year-old male child of Indian origin and the anomaly was found bilaterally in the maxilla. Not many cases have been reported among the Indian ethnicity in the dental literature.

Radiographic images must be cautiously analysed to recognize the presence of bifurcations. However, this may sometimes be difficult due to the crowding of teeth. In the present case, two roots were conspicuous in radiographs. Thus, permanent canines have to resorb both the roots of the primary canines evenly to facilitate its eruption.

The clinician must assess the position of underlying permanent tooth bud radiographically to confirm its orientation during extraction, as trapped underlying crown of the permanent tooth between the bifurcated roots may get accidentally removed [10]. Also, endodontic success in such teeth with the possibility of encountering several root canals require correct diagnosis and careful radiographic assessment [11].

Conclusion

Bi-rooted primary canines may resorb and exfoliate without incident. However, the potential exists for interference with the

eruption of the successor's teeth. Although asymptomatic, such anomalies may lead to complications in endodontic procedures and extraction. Despite the rareness of this condition, all the possible tooth variations should be considered by the clinicians during routine intraoral examinations to diagnose the condition and institute appropriate treatment. There is no comprehensive rationale recommending the interim radiographs but periodic follow up examination should be scheduled until the permanent successor's teeth erupt.

References

1. Talebi M, Parisay I, Khorakian F, Bagherian M. Bi-rooted primary maxillary canines: A case report. *J Dent Res Dent Clin Dent Prospect*. 2010; 4: 101-103.
2. Kokomoto K, Okawa R, Naka S, Nomura, R, Nakano K. Birooted primary canines identified in 8-year-old Japanese girl-Case report. *Pediatric Dental J*. 2018; 29: 48-51.
3. Saravia ME. Bilateral birooted maxillary primary canines: report of two cases. *ASDC J Dent Child* 1991; 58: 154-5.
4. Kelly JR. Birooted primary canines. *Oral Surg Oral Med Oral Pathol* 1978; 46: 872.
5. Lunt RC, Law DB. A review of the chronology of eruption of deciduous teeth. *J Am Dent Assoc* 1974; 89: 872-879.
6. Sicher H, Bhaskar SN: *Orban's Oral Histology and Embryology*, 7th Ed. St. Louis: CV Mosby Co. 1972: 31-36.
7. Morrow JW, Hyltin DL. Supernumerary rooted primary central incisors: report of seven cases 1993; 60: 337-338.
8. Ten Cate AR. *Oral Histology: Development, Structure and Function*. 2nd ed. St. Louis: CV Mosby Co. 1985: 69-72.
9. Assiry A. Bi-Rooted Primary Maxillary Canines: A Case Report. *J Med Case Reports*. 2019; 13: 261.
10. Norman WO, Randall NB. Birooted Primary Canines: Report of three cases. *J Ped Dent*. 1996; 18: 328-330.
11. Orhan AI, Sari S. Double rooted primary canines: A report of three cases. *J Indian Soc Pedod Prev Dent*. 2006; 24: 204-208.