

Construing The Prevalence Of Accessory Roots In Mandibular Canine - Case Report

Running title : Accessory roots in mandibular canines - A case report

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ABSTRACT :

Complete knowledge on the internal and external anatomy of teeth is very important for any dental procedures. Mandibular canines will typically have one root and one root canal. But only a handful cases of mandibular canines have been reported to have accessory roots with incidence of 1-5% globally. Such accessory roots in cuspids are considered to be an uncommon variant in Indian population, which needs to be diagnosed and addressed promptly for successful dental treatment. This remains challenging and hence it is essential to document such anatomical variants for arriving at a better management techniques. Our case report highlights two cases of mandibular canine with accessory root in female patients.

KEYWORDS : *Accessory root, mandibular canine, bi-furcation*

INTRODUCTION :

Human teeth and its roots vary in the anatomical morphology based on the genetic variability of the individuals. Dentists should master on the different types of canal configurations and to identify additional roots as well as canals which plays an important role for dental management such as root canal treatment or extraction¹.

Root canal configurations can be classified based on various morphological features such as number of root canals, its extension, number of roots and number of isthmus. In general, compared to maxillary tooth, mandibular posterior tooth such as premolars are reported to have many accessory roots or root canals. On the other hand, mandibular anterior tooth such as incisor and canines are not much reported to have such additional accessory roots^{2,3}.

Canines as such has a major role in the dentition of an individual which is known to stay longer in the dentition even till the later stage of life compared to other tooth. It is also an important element for a pleasant and pleasing smile and for dental aesthetics. Vertucci investigated the morphology of maxillary and mandibular canines and derived various types of its canal configurations⁴.

Typically permanent mandibular canines will have a single, long and an almost straight root in the mandibular arch, with a little curvature in the apical portion. However there are various evidence stating that the mandibular canines may have a single root with two or three root canals or they may have two roots with two root canals and also fused roots. Previous literatures also report that the existence of two canals or two roots is rare, that ranges from 1% to 5%⁵.

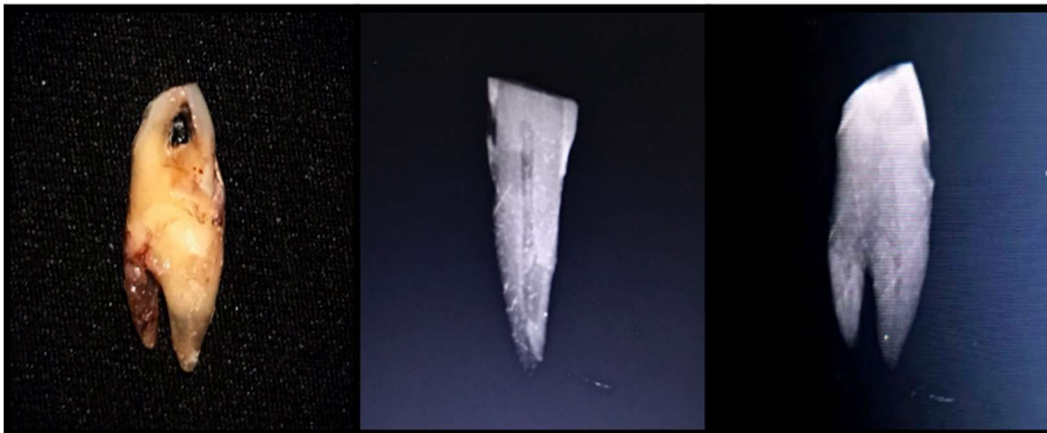
An intensive knowledge of such morphological variation of tooth is required for prompt diagnosis and management of such tooth. However there are only scanty evidence reporting about accessory roots in mandibular canines. This paper presents about two cases of accessory canals in mandibular canines.

CASE SERIES :

CASE NO 1 :

A 62 year old female reported with the chief complaint of pain in lower right front tooth region for past 2 days. History reveals intermittent pain which relieves on medication. Medical history revealed that patient was hypertensive for 15 years and was currently under medication. Patient revealed no previous history of surgery and no history of adverse habits. On clinical examination, intraorally patient had attrited 43 with dental caries and no tenderness on palpation. It was diagnosed as dental caries with pulpitis in 43. Patient was advised for extraction due to poor prognosis. Extraction of 43 was done under local anaesthesia. Following extraction, as an incidental finding, there was an evidence of two roots in 43 (accessory root), one buccal root and one lingual root.

CASE 1



CASE NO 2 :

A 52 year old female reported with the chief complaint of pain in the lower left front tooth region for past 5 days. History reveals intermittent pain which aggravates on mastication particularly during night time and does not relieve on medication. Medical history revealed that patient was diabetic for 22 years and was currently under medication. Patient was otherwise healthy with no surgical history and no adverse habits. On clinical examination, intraorally patient had proximal caries in 33 which was tender on percussion with grade II mobility. It was diagnosed as dental caries with apical periodontitis in 33. Patient was advised for extraction due to poor prognosis. After checking the diabetic status, extraction of 33 was done under local anaesthesia. Following extraction, accidentally, there was an evidence of two roots in 33 (accessory root) one buccal root and one

lingual root.

CASE 2



DISCUSSION :

In general, the mandibular canines are known to be mono-radicular with a higher prevalence of type I Vertucci's classification. But there are likelihood of various anatomical and morphological variations of root canals. According to the literature, the morphological variation related to the number of roots is 1% to 2% for the maxillary canines, and 1.3% to 15% for the mandibular canines, mainly the two roots and two canals expression with one canal per root⁶. It is vital to recognise the possible permutations of the root canals and root for successful dental management.

One of the recent studies reported that majority of mandibular canines had one root (96.6% whereas 3.4% had two separate roots). They also reported that a statistically significant difference was observed for the number of roots between males and females whereas female patients had a higher percentage of two roots compared with that in males⁷. But no significant difference was observed between left and right mandibular canines in this manner. This shows that the morphological variation need not be symmetrical.

In mandibular canines with two roots, the roots can be easily missed or overlapped in the pre-operative radiographic examination since the roots could be positioned buccally and lingually. Hence the radiographs need to be taken in different horizontal angulation when there is a suspicion of accessory root which helps in better identification.

The second root in mandibular canine can divide / branch from the apical, middle or coronal third of root. The two roots can be clearly seen probably when the branching is present from either cervical or middle third in the radiograph while it is difficult to visualise when the branching is from apical third

of root. These findings are all important for any successful dental management hence missing out these variations can lead to failure of root canal treatment or fracture/retained root stumps due to extraction.

In our case we didn't take pre-operative radiograph for these two patients since both the patients had dental caries in mandibular canines with chronic periodontitis that had poor prognosis and hence extraction was planned directly. After extraction, incidentally it was found that the mandibular canines were bi-radicular with two separate roots. In both the cases, the bifurcation of the roots were found to be from middle third of root. Post-operative radiograph were then taken for documentation of this rare morphological variation.

CONCLUSION :

Unlike our study, most of the literatures and case reports have documented endodontic management of these bifurcated roots in mandibular canines and the significance of clinical and radiographic examination in such cases. However these findings are also important for extractions, as we may end up in fracture of the second root or sometimes miss out the second root that may become retained.

Hence it is essential for the dental professionals to be aware on probability of accessory root / canals ,look at all the clues as possible and go for radiological examination when in suspicion for an accessory root. This could lead to better diagnosis and management of such bi-furcated mandibular canines.

REFERENCES :

1. Pécora JD, Sousa Neto MD, Saquy PC. Internal anatomy, direction and number of roots and size of human mandibular canines. *Braz dent J*. 1993 Jan;4(1):53-7
2. F. S. Weine, H. J. Healey, H. Gerstein, and L. Evanson, "Canal configuration in the mesiobuccal root of the maxillary first molar and its endodontic significance," *Oral Surgery, Oral Medicine, Oral Pathology*, vol. 28, no. 3, pp. 419–425, 1969. View at: [Publisher Site](#) | [Google Scholar](#)
3. F. S. Weine, in *Endodontic Therapy*, C. V. Mosby, Louis, MI, USA, 1982
4. F. Vertucci, A. Seelig, and R. Gillis, "Root canal morphology of the human maxillary second premolar," *Oral Surgery, Oral Medicine, Oral Pathology*, vol. 38, no. 3, pp. 456–464, 1974. View at: [Publisher Site](#) | [Google Scholar](#)
5. Plascencia H, Cruz Á, Gascón G, Ramírez B, Díaz M. Mandibular Canines with Two Roots and Two Root Canals: Case Report and Literature Review. *Case Reports in Dentistry*. 2017;8459840.
6. Bolla, N. & Kavuri, S. R. (2011). Maxillary canine with two root canals. *Journal of Conservative Dentistry*, 14(1), 80-2.
7. Emrah Karataslioglu, Fahrettin Kalabalik, Morphological evaluation of maxillary and mandibular canines using cone-beam computed tomography in Turkish population. *Annals of Medical Research*.

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