

Birooted Primary Maxillary Central Incisors

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doi: 10.5866/2014.641724

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Article Info:

Received: July 11, 2014

Review Completed: August 10, 2014

Accepted: November 9, 2014

Available Online: January, 2015 (www.nacd.in)

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INTRODUCTION:

Knowledge of the size, morphology and disparity of the root canals of primary teeth are helpful in visualizing the pulp cavity during treatment. Since primary teeth exhibit morphologic differences from the permanent teeth both in size, external and internal morphology, successful endodontic treatment lies in understanding the complex root canal system.¹ Many of the errors occur during the access cavity preparation or when locating the canals orifices, which is dependent on the dentists tactile perception and knowledge of the dental anatomy.²

The dental literature contains many articles on dental anomalies. Most of these articles report

ABSTRACT:

Morphological variations like additional roots and root canals in human deciduous dentition are rare. Knowledge of the morphology, variation of root and root canals of deciduous teeth are useful for successful endodontic treatment and exodontia. Presented here is a case report of supernumerary root and root canals of deciduous maxillary central incisors. This anomaly was noticed while determining the working length of incisors while performing pulpectomy procedure. Both deciduous maxillary central incisors exhibited bifurcations in the coronal and apical third of the roots which were appreciated following obturation.

Key words: Supernumerary rooted teeth, deciduous incisor

anomalies of the permanent dentition, because a smaller number of anomalies occur in the primary dentition than in the permanent dentition. In the permanent dentition supernumerary roots are not uncommon; with normally single-rooted permanent premolars and canines being particularly affected.³ Reports of similar occurrences in the primary dentition are rare, if present it is usually in primary molars and canines. Their biroot formation, begins between 9 and 10 months postnatally, it may result from an enhanced expressivity of the gene initiating differential growth of Hertwig's epithelial root sheath in multirooted teeth.⁴ The findings of Morrow and Hylin, suggest that the potential for developing supernumerary roots is present throughout the course of root elongation.⁵

The present case report describes a case of uncommon double rooted primary central incisors.

CASE REPORT:

A five and half year old boy reported to the Department of Pedodontics and Preventive Dentistry, Maratha Mandal's Dental college and research center, Belgaum, Karnataka, with chief complaint of decayed teeth. The child's medical history included no systemic disorders, allergies and trauma. An intraoral examination revealed primary dentition stage with multiple carious lesions. Pulpectomy followed by stainless steel crown restorations were done for left deciduous second

molar and right deciduous first and second molars. Pulpectomy was also indicated for both maxillary central incisors. During working length determination the radiovisiograph (RVG) revealed two roots. This bifurcation was not clearly appreciated in the conventional intraoral periapical radiograph (Figure 1), may be due to difference in the angulation. The RVG of deciduous right central incisor showed bifurcation in the coronal third of the root and left central incisor in the apical third (Figure 2). Clinically both teeth appeared normal in size and shape (Figure 3). Pulpectomy was completed for both teeth using zinc oxide eugenol followed by omega loop and strip crowns (Figure 4).



Figure 1: Conventional intraoral periapical radiograph of maxillary anterior region



Figure 2: Post obturation radiovisiograph showing bifurcation of roots in the coronal third of right side central incisor and in the apical third of left central incisor



Figure 3: Pre-treatment clinical appearance of the crown of deciduous central incisors



Figure 4: Post restoration intraoral photograph.

DISCUSSION

Deciduous central incisors normally have single root and root canal system. The present case report describes bilateral deciduous central incisors with two roots. Double rooted deciduous incisors are extremely rare dental anomaly. Worldwide, many studies have been published on the incidence and prevalence of anomalies in permanent dentition. Relatively few surveys have been reported on anomalous primary teeth. These studies were mostly on Caucasians and Mongoloid populations. Most of the reported data on dental anomalies in Indian populations are case reports of supernumerary teeth, supernumerary root, hypodontia, double teeth, and talon cusps.

Supernumerary root in deciduous dentition is very rare and occurs most commonly in mandibular molars and in canines. The incidence of occurrence of three roots in deciduous second molar has been recorded to be 27.8%.⁶ The prevalence of occurrence of three roots in deciduous first molars has accounted to about 4.96% to 9.7%.⁷ The prevalence of double rooted canine is higher in maxilla than in mandible, and this anomaly occur more frequently in black, and male children, and bilaterally.³

Several authors have postulated theories for the occurrence of this phenomenon. It has been demonstrated that bifurcation of roots may be related to an ingrowth of Hertwig's epithelial root sheath. Other researchers have suggested that fusion or gemination may be related to the clinical presentation of supernumerary roots. The enamel organ plays an important part in root development by forming Hertwig's epithelial root sheath, which moulds the shape of root and initiates dentin formation. These findings suggest that, in the present case a defect in the dental lamina during the early stages of root formation could be an etiological factor. Such abnormalities may be genetically determined, or associated with environmentally induced cellular changes.⁸

The findings of Morrow and Hylin, whose primary central incisors all demonstrated bifurcation only in the apical fourth of the roots, suggest that the potential for developing supernumerary roots is present throughout the course of root elongation.⁵ This is the only report in the literature suggesting bifurcations in the deciduous maxillary incisors. But in the present case bifurcation was present in the coronal third and middle third of roots of deciduous maxillary central incisors. In another in-vitro study, the root canal

morphology of deciduous anteriors and molars were assessed using cone beam computerized tomography. The results showed the presence of bifurcation of root canal at middle third in 13% of mandibular incisors while 20% of mandibular molars had two canals in distal root.⁹ Knowledge of variation in the morphology of the root canal system is a key to successful endodontic treatment.

CONCLUSION:

An accurate diagnosis of the morphology of the root canal system is a prerequisite for successful root canal treatment. Frequently, root canals are left untreated because the clinicians fail to identify their presence, particularly in teeth that have an anatomical variations or additional root canals. Supernumerary root is a developmental condition and may involve any tooth. Thorough knowledge would help in reducing the complications like failure of endodontic treatment and fracture of root or accidental removal of permanent tooth bud if trapped between the roots during exodontia. Observation during growth and development will help avoid problems during successive stages of development and eruption.

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