Case Report

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Single Rooted Primary Molars in Addition to Taurodontism : A Rare Case Report

Abstract:
Knowledge regarding the morphological variations in root and root canals aids in successful dental treatment. However the literature regarding dysmorphology of roots in primary dentition is sparse. The purpose of this article is to present a rare case of bilateral single rooted mandibular primary first molar and maxillary second molar with taurodontism in mandibular second primary molar in the same patient.

Key-words: Primary molar, Bilateral, Single root, Taurodontism, CBCT

Introduction:

A successful endodontic service, calls for a thorough knowledge of roots and root canal morphology. Root anomalies in the primary dentition are quite rare and most of them include concrescence, dilacerations and hypercementosis[1]. The incidence of these root morphological variation especially single rooted primary molar in the primary dentition is not very distinctively documented .Only four cases of single rooted primary molars have been reported so far and they are unilateral or bilateral [2]. Ackerman et al. were the first to document such malformation in primary molars and termed single roots as “pyramidal,” “cuneiform,” “tubular,” “cylindrical,” “prismatic” and “conical” [3]. Etiology of these dysmorphological roots can be attributed to genetic or environmental factors which lead to failure of invagination of derivatives of enamel organ during the process of root formation. Whereas taurodontism is a dental anomaly characterised by enlarged pulp chamber with more apical positioning of floor of pulp chamber and furcation of roots. The bifurcation or trifurcation may be few millimetres away from the radiographic apex or the distance from the trifurcation or bifurcation of the root to the cementoenamel junction (CEJ) is greater than the occlusocervical distance [4]. This anomaly mostly affects permanent molars but may also be observed in both the dentitions. It may be unilateral or bilateral and in any combination of teeth or quadrants. Usually appears as an isolated, but its association with several syndromes and other abnormalities has also been reported. Most reports indicate a prevalence of 2.5–3.2%[5] in permanent teeth while in deciduous teeth it is 0.54%.

The following case report presents a case of single rooted primary molars in addition to taurodontism seen in the same patient.

Case Report:

Patient reported with chief complain of pain in right lower back tooth region on clinical examination swelling was seen in

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lower right back tooth region (fig.1). Radiographic examination revealed a carious right primary molar with slight radiolucency (fig.2), in addition to this the tooth presented with unusual anomaly with single rooted primary molar and single canal (fig.2). Treatment included pulpectomy of the lower right primary first molar (84) followed by stainless steel crown and the same was explained to the parents of the child. After obtaining verbal consent, access opening was done under local anesthesia by isolating the tooth 84, and was found to have single canal. After determination of the working length (11 mm)(fig 3.),cleaning and shaping was performed. Normal saline solution and 2.5% sodium hypochlorite were alternatively used for irrigation. The canal was dried with sterile paper points and filled with metapex (META BIO MED CO. LTD.) and was finally restored with stainless steel crown(fig 4).

Fig 1. Swelling wrt 84

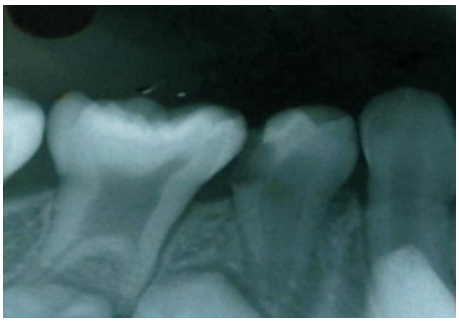

Fig 2.Single rooted 84 with radiolucency

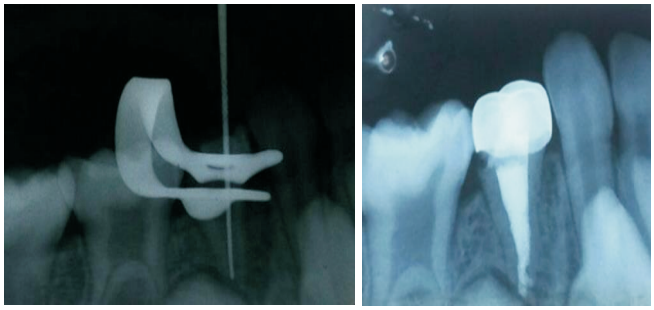

Fig 3.Working length determination

Fig 4.obturation followed by stainless steel crown

Further, in order to study the morphology of other molars, periapical radiographs (fig.5)and digital orthopantomogram (OPG) was taken (fig.6). Surprisingly, the left primary mandibular first molar and both primary maxillary second molars also had a single root and a single canal. Taurodontism was evident in the primary mandibular second molars. CBCT (Cone Beam Computed Tomography) was done in to confirm the findings (fig.7).

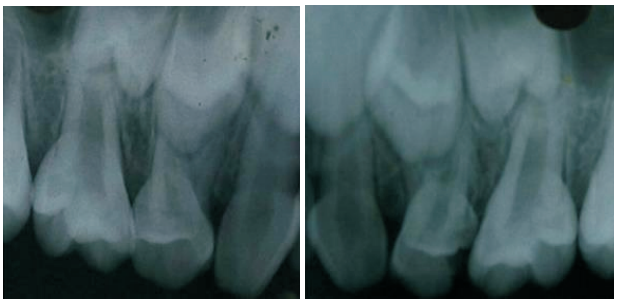

Fig 5.Upper Molar Radiographs

Fig 6. Orthopantomogram (OPG)

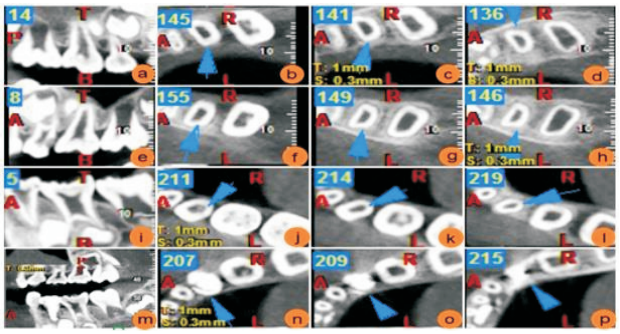

Fig 7:- Different CBCT views at different levels.

(A)-Axial view of primary maxillary right second molar showing single canal

(B)-Cross- sectional view of primary maxillary right second molar at cementoenamel junction (CEJ) showing single canal (arrows).

(C)- Cross-sectional view of primary maxillary right second molar at mid-root level showing single canal (arrows).

(D)- Cross-sectional view of primary maxillary right second molar at apex level showing single canal (arrows).

(E)- Axial view of primary maxillary left second molar showing single canal.

(F)- Cross-sectional view of primary maxillary left second molar at cementoenamel junction (CEJ) showing single canal (arrows).

(G)- Cross-sectional view of primary maxillary left second molar at mid-root level showing single canal (arrows)

(H)- Cross-sectional view of primary maxillary left second molar at apex level showing single canal (arrows).

(I)- Axial view of primary mandibular left first molar showing single canal

(J)- Cross-sectional view of primary mandibular left first molar at cementoenamel junction (CEJ) showing single canal (arrows).

(K)- Cross-sectional view of primary mandibular left first molar at mid-root level showing single canal (arrows).

(L)- Cross-sectional view of primary mandibular left first molar at apex level showing single canal (arrows).

(M)- Axial view of post-operative primary mandibular right first molar showing single canal.

(N)- Cross-sectional view of post-operative primary mandibular right first molar at cementoenamel junction (CEJ) showing single canal (arrows).

(O)- Cross-sectional view of post-operative primary mandibular right first molar at mid-root level showing single canal (arrows).

(P)- Cross-sectional view of post-operative primary mandibular right first molar at apex level showing single canal (arrows).

Discussion:

The most commonly observed variation of tooth morphology is confluence of molar roots into one, which may be commonly observed in the permanent third molar but rarely in deciduous first molar. These root canal configurations can be classified using vertucci's class I root canal which is a rare finding among the primary teeth [6].

Ackerman et al was the first to report a case of single rooted primary molar in a 10-year-old child [3]. It can occur unilaterally or bilaterally with frequent involvement of permanent dentition than primary dentition. Robbins and kenne suggested that single pyramidal shaped root in molar was inherited as an autosomal dominant condition [7]. While another report suggested as an autosomal recessive inheritance pattern. Females are seen to be more frequently affected than males with respect to root dysmorphology[8] ,the cause for female predilection is unknown[9]. From a clinical point standpoint, when the initial radiograph shows an image with an unusual anatomy , the clinician should suspect its presence on the contralateral pair and a contralateral image shoud be taken. Sabala et al stated that the more rare the aberration, the more likely that it is bilateral[10]l. As in the present case bilateral single rooted molar was presented in maxillary and mandibular arch.

A taurodontic tooth presents a challenge during negotiation, instrumentation and obturating the canal. Because of the complex morphology of the canals complete filling of the canals is challenging. Identification of the condition can only be made by radiographic method as the external morphology of the teeth is within the normal configurations. The radiographic method is the only method to notice the

characteristics such as rectangular pulp chamber elongated body of the tooth, shortened roots and root canals, location of the furcation near apices[11]. In the present case report periapical radiograph in addition with CBCT was used as a diagnostic tool and to further study the morphology of the canals. No restoration of endodontic procedure was carried out as the teeth were free of caries.

Since radiographic images give a two-dimensional information about three-dimensional teeth, fewer variations in the canal pattern can be detected using radiograph when compared to CBCT. In the present case CBCT was used used as diagnostic tool along with the periapical radiograph in order to study the study the morphology in detail.

Conclusion:

Single rooted permanent molars have often been reported in the literature .However bilateral single rooted primary first molar in addition with taurodontism in primary molar in single case without any syndrome is not documented in liretature. This case reort brings to light untrodden facts of dentistry.

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