



Radiculomegaly (Rhizomegaly/Root Gigantism) in permanent teeth of a non-syndromic patient – A rare case report

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Abstract:

The purpose of this article is to present a case of non-syndromic Indian female patient diagnosed with an occurrence of Radiculomegaly (Root Gigantism or Rhizomegaly or extremely long root) affecting the permanent maxillary right lateral incisor and all canines except mandibular right canine. Root dilaceration was also observed in mandibular left canine, first premolar and right first premolar.

Key words: permanent canine; root anomaly; radiculomegaly.

Dear Editor-In-Chief:

A 45-year-old female patient reported to a private dental clinic complaining of fractured tooth in the upper front region. On physical examination, patient was apparently normal, with no signs and symptoms of any associated systemic, metabolic, or syndromic disorders observed. On intraoral examination, all permanent teeth were erupted in the oral cavity. In maxillary left region, the permanent left central incisor had Ellis class III fracture which was treated long back in some other dental clinic. No other peculiar abnormality in other teeth was observed. To know the status of fractured tooth, patient was subjected to radiographic evaluation. Orthopantomograph (OPG) radiograph exhibited some radiopaque filling material within the root canal of maxillary left central incisor suggesting attempted root canal treatment. On further examination of the radiograph, it was evident that root of permanent maxillary right lateral incisor appeared extremely long (measured 30 mm in length) compared to left lateral incisor. Even the maxillary canines (right canine - 30 and left canine - 29 mm) and mandibular left canine (29 mm) appeared very long and bulky (Figure 1). Root dilaceration was also observed in mandibular left canine, first premolar and right first premolar. The OPG was taken in normal angulation and no elongation in radiographic exposure was evident. No other dental malformations were observed. Based on literature search, the case was diagnosed as Radiculomegaly involving lateral incisor. Regarding chief complaint of the patient, a treatment consisting of retreatment was advised for the maxillary left central incisor.

Patient Age	Gender	Ethnicity	Tooth affected with Radiculomegaly	Length of the Root	Associated Anomalies
47 years	Female	Indian	Maxilla Right Lateral Incisor Right Canine Left Canine	30 mm 30 mm 29 mm	Root Dilaceration in Mandibular Left Canine + Right First Premolar
			Mandible Left Canine	29 mm	

Table 1: Details of the present case diagnosed with Radiculomegaly involving permanent maxillary right lateral incisor.

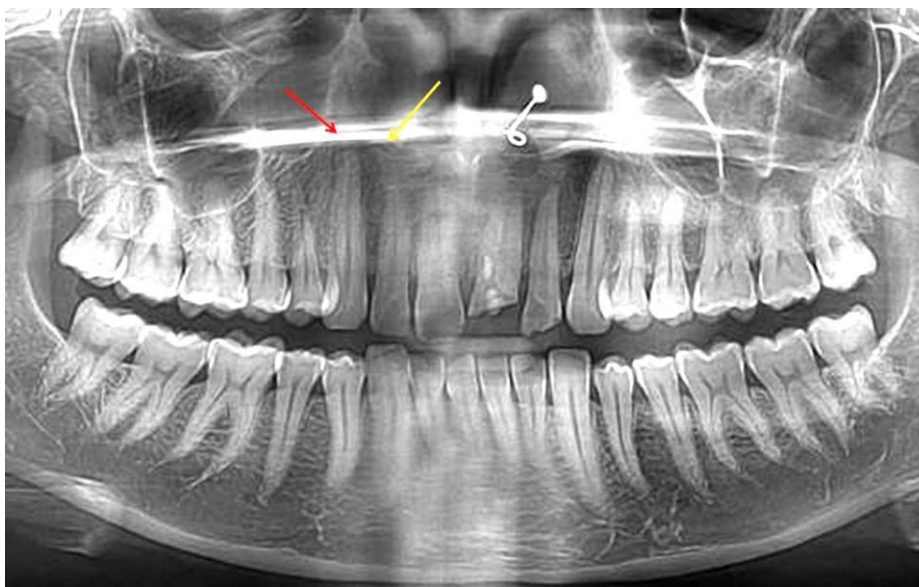


Figure 1: Orthopantomograph showing extremely long root (30 mm) in permanent maxillary right lateral incisor (apex is marked – yellow arrow) and almost equal to root of right canine (apex is marked – red arrow). Permanent maxillary both right (30 mm) and left canines (29 mm) and mandibular left canine's root (29 mm) also appeared long. Root dilaceration was also observed in mandibular left canine and first premolar and right first premolar.

38-year-old female patient reported to a private dental clinic complaining of pain in the upper left tooth from past 15 days. On physical examination, patient appeared healthy and there were no signs and symptoms of particular disorder. On intraoral examination, all permanent teeth were erupted including third molars. Permanent maxillary first molar was totally destroyed with no crown structure remaining due to dental caries. Clinically, in the maxillary arch permanent right and left canines appeared missing and also in the mandibular arch, permanent first premolars were missing on both right and left side. Small gap was evident distal to the lateral incisors on both right and left side. Patient was subjected to radiographic evaluation to rule agenesia of these missing teeth using orthopantomograph. On radiographic examination, surprisingly permanent maxillary both right and left canines were impacted in horizontal position (Figure 1). The left canine was transmigrated with its full crown component crossing the mid-

palatal suture and was seen in the opposite arch above the root apex of the right central incisor. On right side, the canine was located above the root apex of right lateral incisor with the crown facing mesial direction with root facing distal direction. Both right and left canines were appeared mirror image of one another or looked like they are kissing or touching each other in the same angulated position. Radiograph also showed presence of severe taurodontism affecting mandibular second molars and congenital agenesia of both right and left first premolars (Figure 1). There was no any associated pathology observed with these two teeth. A final diagnosis of transmigration of left canine and horizontal impaction of right canine was made. Patient was explained about the varied dental phenomenon and kept under observation as patient did not have any symptoms associated with it and extraction of the upper left first molar was advised.

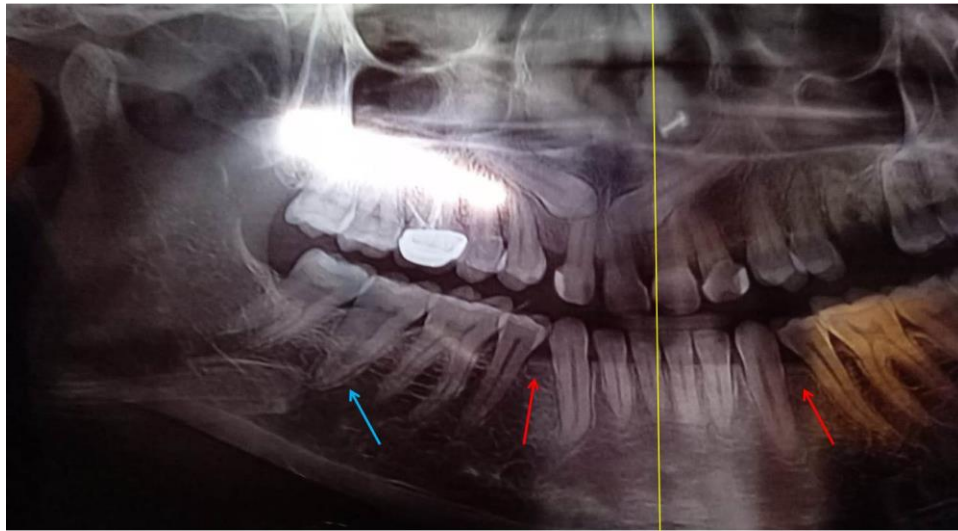


Figure 1: Orthopantomograph radiograph showing “Mirror Image Canines” or “Kissing Canines” in the maxillary arch. Intraosseous transmigration of permanent maxillary left canine (two fourth portion of the crown – yellow line) crossing the mid-palatal suture to the opposite side of the arch is evident. Right canine is impacted in mesioangular position similar to left canine. Congenital agenesis of bilateral mandibular first premolars (red arrows) and hypertaurodontism in mandibular second molar (blue arrow) is also present.

Discussion

There is no classification system for categorizing the maxillary canines which are in transmigration. This is due to low prevalence of transmigrated maxillary canines from that it is difficult to frame classification system. Moreover, the whole tooth crossing the mid-palatal suture is also not found or identified till date. In the present case, full crown portion was crossed the mid-palatal suture and seen opposite side of the arch above the root apex of the right central incisor. Transmigration of permanent maxillary central incisor is also reported by the current author which is also rarely reported [7].

As transmigrated teeth are always impacted, most of the time they are not diagnosed from routine daily examination unless a radiographic examination is carried out. Therefore, radiographic examination is mandatory in diagnosis of transmigrated canines. This indicates necessity of future studies including large sample size in different population across the globe. There are only few studies showing impaction of maxillary canines. One study carried out in 2011, reported only six cases on transmigrated maxillary canines out of 4500 patients examined [8]. Prior to this in 2010, Celikoglu et al [9] investigated panoramic radiographs of 2,215 patients of Turkish origin from an orthodontic department consisting of 940 males and 1,275 females. The maxillary transmigrated canine was associated with impacted mesiodens. The percentage of maxillary canine impaction was more compared to transmigrated canines.

Different researchers investigated impaction of maxillary canines and formulated various classifications. In 2003, one searcher (Yamamoto) classified impacted maxillary canines based on the orientation of the long axis of the impacted tooth with the occlusal

plane into seven types grading from type I to type VII [10]. The present case was classified as type IV according to this classification as the tooth was impacted above the roots of central and lateral incisors with crown facing mesially (towards midline) and root distally. Using the same classification, a recent study evaluated the pattern and prevalence of maxillary canines by studying 5000 orthopantomograph radiographs among Saudi population. They discovered a prevalence of 46% of type I cases and 37% of type II [11]. Similar studies are highly warranted including different ethnic groups across the globe. Regarding treatment of ‘mirror image canines’ or ‘kissing canines,’ various modalities have been suggested such as periodic observation, surgical exposure followed by orthodontic alignment, transplantation and surgical removal [12,13]. Impacted canines are most of the time associated with retained primary teeth due to delayed root resorption process. But in this case such incidence was not observed.

Congenital agenesis of tooth most commonly involves permanent maxillary lateral incisor followed by mandibular second premolars. Second premolar agenesis is more common in the mandible (4.4%) than in the maxilla (1.7%). But agenesis of first premolar is still rarer with a documented prevalence of 0.1% in the mandibular arch compared to maxillary arch (0.2%) [14,15]. In the case reported here, exhibited congenital agenesis of both right and left first premolars making this case a rarest entity.

Taurodontism also termed as ‘Bull Tooth’ is another dental anomaly rarely seen during clinical practice. It is characterized by an apically displaced pulp chamber, a shortened root and an enlarged pulp chamber and apical displacement of the bifurcation or trifurcation of the roots in the affected tooth [16,17]. Shaw et al in 1928 [18], classified these teeth into three types as hypo, meso and hypertaurodont based on apical displacement of the root. Based

on this classification the present case was classified as hypertaurodont as the pulp chamber was displaced apically nearly reaching the apex giving prismatic or cylindrical forms.

Conclusion

The current case report is one more addition to the occurrence of 'mirror image canines' which is extremely rare encountered dental phenomenon in the maxillary arch in association with other dental anomalies which are also rarer. Author wishes to welcome future publications involving prospective studies of large sample size to come up with more research output.

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