

Bilateral Radix Entomolaris in primary mandibular second molars: Report of an unusual case

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Abstract: Supernumerary roots are uncommon in primary teeth. Primary mandibular second molars normally have two roots, one mesial and one distal. Rarely an additional third root is seen and when this extra root is situated distolingual to the main distal root it is referred as Radix Entomolaris and when it is present mesiobuccal to mesial root it is called Radix Paramolaris. The knowledge of the presence of additional roots and root canals is very essential for the successful endodontic treatment. This report presents an unusual case of bilateral Radix Entomolaris in primary mandibular second molars in a 5-year-old male patient.

Key Words: Primary mandibular second molar, Radix Entomolaris, Radix Paramolaris, supernumerary root.

I. Introduction

The knowledge of variations in root and root canal morphology of primary teeth is very important for the successful clinical practice. The prevalence of dental anomalies is rare in primary dentition than in permanent dentition.^{1,2} "Radix Entomolaris" a supernumerary root, was first mentioned in the literature by Carabelli in 1844. If the supernumerary root is located distolingual to the main distal root it is called "Radix Entomolaris" and if it is located mesiobuccal to the mesial root it is called "Radix Paramolaris."³ Tratman,⁴ reported that three rooted mandibular molars are rare (frequency <1%) in primary dentition than in permanent dentition. A recent study on Indian population shows a prevalence of 5.6% three rooted primary mandibular molars in children.⁵ Failure to diagnose and treat the supernumerary roots in primary molars may lead to the failure of endodontic treatment and even early loss of tooth causing esthetic, functional and psychological problems in children.³ This paper presents an unusual case of bilateral Radix Entomolaris in primary mandibular second molars in a 5-year-old male patient.

II. Case Report

A 5-year-old male patient reported to the department of Pedodontics with a chief complaint of pain in lower left and right back teeth. The patient's medical history was not significant. On clinical examination deep carious lesions were detected with respect to left and right primary mandibular molars (figure-1). An intraoral periapical radiograph (IOPA) was made with respect to 74, 75 and 84, 85 to assess the root canal morphology and periapical pathology. The radiographs revealed deep carious lesions involving pulp with respect to 74, 75 (figure-2) and 85 (figure-3). Incidentally we detected a supernumerary (third) root in relation to 75 (figure-2) and 85 (figure-3). A second intraoral periapical radiograph was made with a more mesial horizontal angulation (20 degree) in order to localize the supernumerary root. It was confirmed that both the primary mandibular second molars had an additional third root, situated distolingual to the distal root. The child patient was advised pulpectomy with respect to 75 and 85, stainless steel crown with 84 and extraction followed by space maintenance with 74.

The treatment procedure was explained to the patient and parents. Following the administration of local anesthesia, access cavity was prepared with respect to 85. The conventional rectangular access cavity was modified to a trapezoidal shape to improve access to the additional distolingual (third root) canal in 85. The pulp tissue was extirpated with barbed broach and working length was determined by keeping it 1-2mm short of radiographic apex (figure-4). The cleaning and shaping of the canals were carried out using Hedstroem files (21mm) up to a maximum size of no. 30. Irrigation with sodium hypochloride (2.5%) and normal saline was continuously done throughout the instrumentation. The root canals were dried with absorbent paper points and zinc-oxide eugenol cement closed dressing was given. In subsequent visit the root canals were obturated with zinc-oxide eugenol obturating material and the access cavity was sealed with thick mix of zinc-oxide eugenol cement (figure-5). The entire pulpectomy procedure was repeated on 75 and the root canals were obturated with zinc-oxide eugenol obturating material in subsequent visit (figure-6 and 7). Stainless steel crowns were placed on 84 and 85 (figure-8). The patient was rescheduled for follow up treatment including extraction followed by space maintenance with grossly decayed 74.

III. Figures



Figure-1. Intraoral photograph showing deep carious lesions with respect to 74, 75 and 84, 85.

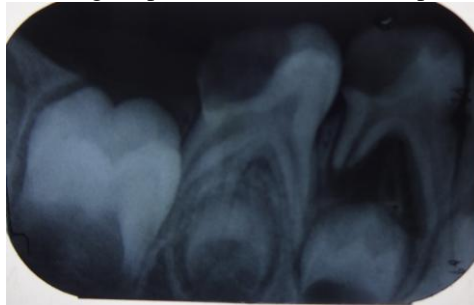


Figure-2. IOPA radiograph showing deep carious lesions involving pulp with respect to 74, 75 and a supernumerary distolingual root in relation to 75.

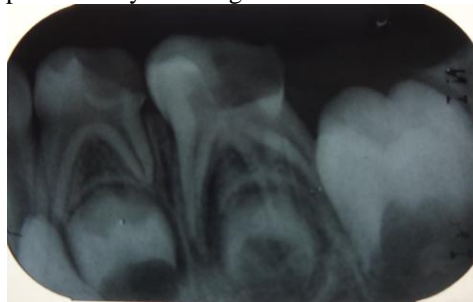


Figure-3. IOPA radiograph showing deep carious lesion with 84, pulpal involvement with 85 and a supernumerary distolingual root in relation to 85.



Figure-4. Working length IOPA radiograph with 85 showing a supernumerary distolingual root.



Figure-5. Post-obturation IOPA radiograph with 85 showing a supernumerary distolingual root.



Figure-6. Working length IOPA radiograph with 75 showing a supernumerary distolingual root.

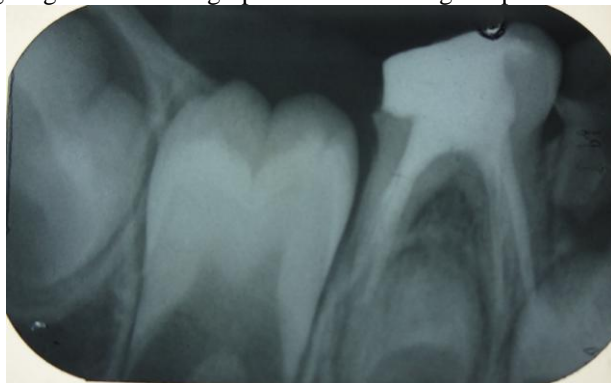


Figure-7. Post-obturation IOPA radiograph with 75 showing superimposition of distal and distolingual roots.



Figure-8. Post-operative intraoral photograph showing stainless steel crowns with respect to 84 and 85.

IV. Discussion

Primary mandibular second molars normally have two roots, one mesial and one distal. Supernumerary roots are uncommon in primary teeth. The prevalence of three rooted primary molars varies in different populations.^{3,6} Yang et al.,⁷ analyzed the prevalence of three rooted primary mandibular second molars using cone beam computed tomography and found 27.52% prevalence in Chinese children. A Japanese radiographic study revealed that 5.6% of 1408 samples of mandibular first primary molars had an additional distolingual root.⁸ A recent study on Indian population shows a prevalence of 5.6% three rooted primary mandibular molars in children.⁵ The present paper reports an unusual case of bilateral Radix Entomolaris in primary mandibular second molars.

The exact etiology of Radix Entomolaris and Radix Paramolaris is not known.³ Accessory roots form in a similar fashion to normal roots, i.e., as a result of the ingrowth of Hertwig's root sheath.⁹ Tratman,⁴ reported that the additional root is not simply a division of the distal root but, rather, is a true extra root with a separate orifice and apex.

The presence of supernumerary root has clinical implications during endodontic treatment. Radix Entomolaris is usually situated in the same buccolingual plane as that of distal root. Hence superimposition of both the roots can occur on diagnostic radiograph resulting in an inaccurate interpretation. If the distal root outline/contour is unclear, a second radiograph should be made with a more mesial or distal horizontal angulation (20-30 degrees) to confirm the presence of supernumerary root.¹⁰ Accurate diagnosis of this additional root can avoid complications of missed canal and failure of endodontic treatment.

The presence of supernumerary roots in primary molars complicates the extraction procedure. The developing premolar is always placed in the inter-radicular area surrounded by the thin primary molar roots. Therefore, during extraction procedure, one should make sure that the crown of the premolar is not trapped in the inter-radicular area of the primary molar as this could cause accidental removal of the developing permanent tooth bud.^{6,11} Moreover, the presence of supernumerary roots in primary molars has forensic value in identifying people of certain ethnic race like Mongoloid people.⁷ Hence the clinician's should be aware of the presence of supernumerary roots in primary molars during endodontic and exodontia procedures.

V. Conclusion

The knowledge of variations in root and root canal morphology of primary teeth is very essential. Failure to diagnose and treat the supernumerary roots in primary molars may lead to failure of endodontic treatment and even early loss of teeth causing esthetic, functional and psychological problems in children.

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