Case Report

RADIX ENTOMOLARIS & EARLY CHILDHOOD CARIES - AN UNUSUAL CASE REPORT

Meenu Bhola, Sumeet Palta

Professor and Head, Post graduate student, Department of Pediatric & Preventive dentistry, DIRDS, Faridkot

Abstract

Esthetic rehabilitation of a young child who has suffered multiple tooth loss due to early childhood caries (ECC) or rampant caries is one of the greatest restorative challenges faced by a pediatric dentist. Moreover, developmental variations occurring in mandibular molars lead to a call for proper knowledge of root morphology and accurate interpretation of radiograph which ultimately lead to a successful treatment outcomes. Various anterior removable or fixed esthetic appliances may be used to replace lost teeth. This paper discusses in detail about the management of bilateral Radix Entomolaris in primary molars and severe ECC managed with fixed aesthetic Modified Nance appliance.

Keywords: Early Childhood Caries, Supernumerary root, Radix Entomolaris, Root morphology

Corresponding Author: Dr. Meenu Bhola, Professor and Head, Post graduate student, Department of Pediatric & Preventive dentistry, DIRDS, Faridkot


INTRODUCTION

Early childhood caries (ECC) is a serious public health problem, common in both underdeveloped and industrialized population. It is a unique pattern of caries in very young children due to prolonged or improper feeding habits. During sleep, the infant may be fed with a nursing bottle containing a high amount of fermentable carbohydrates, which pools around the maxillary incisors. This sugary environment is highly retentive and cariogenic. The decreased salivary secretion during sleep associated with tooth cleaning neglect and unrestrained nocturnal breast feeding increases the risk of acquiring caries. Such lesions usually begin on labial surfaces of all anteriors and advance rapidly as a turgid demineralization causing gross destruction of all anterior primary teeth. Such a loss of anterior teeth has a severe impact on the psychology of the child and may lead to improper speech. When these teeth are lost, replacement and prosthetic management is very important to restore all functional and aesthetic needs of the child. The replacement should be such that it should not interfere with the eruption process of the underlying successor. Various
esthetic options are available for lost anterior teeth, include removable or fixed partial dentures which will act as a space maintainer and gave a huge psychological boost for the child. On other hand, Radix Entomolaris is a developmental variation occurring in mandibular molars associated with presence of an extra root and so the extra canal in many cases. The prevalence of root variations is lower in the primary dentition than in the permanent dentition.5 Tratman reported that three-rooted mandibular first molars are rare with a frequency of <1% in the primary dentition and common in the permanent dentition.3 Three rooted primary molars vary in different populations. Chinese children shows a prevalence of 27.52% in primary mandibular second molars.7 Indian population shows a prevalence of 5.6% three rooted primary mandibular molars in children.8 It is difficult to analyze the root configuration in primary molars because of the presence of physiologic or pathologic root resorption, and extracting primary molars with sound roots is difficult because of root divergence. 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. So, proper diagnosis and the knowledge of variations in root and root canal morphology of primary teeth is very important for the successful clinical practice. The present case report illustrates the management of bilateral Radix Entomolaris in primary molars and severe ECC with fixed aesthetic Modified Nance appliance.

CASE REPORT

A 4-year-old male child accompanied by his mother reported to the Department of Pedodontics and Preventive Dentistry, DIRDS, Faridkot with the chief complaint of pain in lower left back tooth region since 7 days. The patient’s medical history was non contributory. The patient’s mother gave a history of breastfeeding for 1.5 years after which the child was bottle fed for 2 years. No known allergy to food or drugs was found and no history of oral habits was present. Intraoral examination of the child revealed a complete set of deciduous dentition. It was observed that teeth 55,62,65,74,75,84,85 were carious (Fig. 1 a,b,&c). Abscess was present in relation to 74, 75. Root stumps were present in relation to maxillary incisors (51, 61, 52) and posterior teeth (54, 64). Intraoral periapical radiographs revealed pulp involvement with 74, 75, 84. A diagnosis of Type II ECC affecting maxillary incisors and molars without affecting mandibular incisors was made. The clinical findings were confirmed by an orthopantomogram (Fig. 2). An intraoral periapical radiograph (IOPA) was taken 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 and 84 (Fig. 3). Incidentally, we detected a supernumerary (third) root in relation to 74,75 and 84. A second intraoral periapical radiograph was taken with a more mesial horizontal angulation in order to localize the supernumerary root. It was confirmed that both the primary mandibular molars had an additional third root, situated lingual to the mesial root. The child patient was advised pulpectomy w.r.t 74, 75 and 84. On first visit, child was made comfortable with dental environment and behaviour management was done by tell-show-do technique. Diet analysis, parent counselling
and oral prophylaxis were done. Gross excavation of all lesions as an initial approach was done w.r.t 85, 55, 65. In the subsequent visits, pulpectomy was performed w.r.t 74, 75, 84 keeping in mind the additional root morphology of the teeth in order to avoid complications of missed canal (Fig. 4&5) followed by stainless steel crowns. Composite build up was done w.r.t 62. Extraction of root stumps was carried out w.r.t 51, 52, 61, 54, 64. Bands were adapted w.r.t 55, 65 and fixed Nance modified appliance was made (Fig. 6). The appliance was then cemented using GIC with the bands in relation to 55, 65 and occlusion was checked. Treatment was carried out in multiple visits and full mouth rehabilitation was done. The patient was followed up for 3 months.

Fig. 2: Orthopantomogram confirming the intraoral findings

Fig. 3 (a) Pre-operative IOPA w.r.t 74, 75 (b) Pre-operative IOPA w.r.t 84

Fig. 4 (a), (b) Working length w.r.t 74, 75 (c) - Obturation- 74, 75. (Marked Arrows showing Radix Entomolaris)
DISCUSSION

In the pediatric dental practice, practitioners often come across various anomalies related to crown and root of the permanent and primary teeth. One of the uncommon example is the presence of radix entomolaris (RE) with respect to primary molars. Primary teeth are frequently affected by caries at an early age and may require successful endodontic treatment for their long-term retention in the oral cavity until their exfoliation. But it gets more difficult to treat such teeth when there is any developmental variation present. Accurate diagnosis, the awareness and knowledge of these additional roots and associated unusual root canal morphology is essential for the successful treatment outcome. The present case report describes the management of bilateral Radix Entomolaris in primary teeth and ECC with fixed modified Nance appliance which was a challenge to treat. The main causative factor in development of ECC is cariogenic diet and poor oral hygiene. These lesions progress rapidly leading to the gross destruction of all primary anterior. Loss of anterior teeth may lead to improper speech, affects aesthetics and can psychologically traumatize a young child. Maintaining the integrity of primary teeth till exfoliation is important not only to maintain arch integrity but also to prevent psychological effects associated with loss of teeth. The management of such mutilated teeth is a challenge due to close proximity of pulp, thin enamel surface area that is available for bonding, cost factor, and the child’s cooperating ability. Various removable and fixed aesthetic appliances are available as a treatment option. In our case, the appliance which has been delivered to a patient is of the fixed type and it bears none of the disadvantages of the removable type, such as patients’ cooperation and chances of breakage. Between the age of two to four years, the intercanine growth is stable and there is no net loss of space between the canines. Changes in arch length with tooth migration generally occur after the eruption of the first permanent molar. During that period, the appliance can be removed, as it coincides with the eruption of the central incisors. Bilateral Radix Entomolaris was another challenge for us. Accurate interpretation of radiograph for the presence of supernumerary
root and the thorough knowledge of primary tooth and its root canal anatomy is very important for successful endodontic treatment. Supernumerary roots are uncommon in primary teeth. Radix Entomolaris is usually situated in the same buccolingual plane as that of distal root. Hence superimposition of both the roots is a common problem as encountered in our case during pulpectomy. For proper interpretation, a second radiograph has been taken with a more mesial horizontal angulation to confirm the presence of supernumerary root. An awareness pertaining to the variations in root morphology in primary teeth is highly important among clinicians to render best treatment and in the maintenance of these teeth in the oral cavity.

CONCLUSION

ECC is a multifactorial disease which severely affects the primary maxillary incisors and molars, hence leads to compromised mastication, unesthetic appearance and psychological trauma to the child. One of the most considerable reasons for replacing missing anteriors is to restore an aesthetic appearance and thus promote a normal psychological development in the child. Moreover, 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 unsuccessful outcome of endodontic treatment and even early loss of teeth causing aesthetic, functional and psychological problems in children.

REFERENCES


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