CASE REPORT

Bilateral radix entomolaris with primary and permanent mandibular first molars

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SUMMARY

Dental practitioners should be aware of the morphological dental anomalies like additional roots; their location, incidence and associated unusual root canal morphology. They should also carefully interpret the intraoral radiographs so that such anomalies do not go unnoticed.

BACKGROUND

Dental practitioners often come across to various anomalies related to crown and root of the permanent and primary teeth. One of the interesting and uncommon examples is the presence of radix entomolaris (RE) with primary and permanent molars. The awareness and knowledge of these additional roots and associated unusual root canal morphology is essential for the successful treatment outcome. This paper presents the case of RE with primary and permanent first molars bilaterally that were diagnosed after careful interpretation of the radiographs.

CASE PRESENTATION

A 10-year-old girl attended the OPD of the department of pedodontics and preventive dentistry, for the treatment of carious teeth. On clinical examination a deep carious lesion was found in left primary second mandibular molar. A preoperative intraoral periapical radiograph was taken. The radiographic examination revealed an additional root both in left primary first molar and permanent first molar (figure 1). Second radiograph was then taken with 30° mesial shift. The radiographs, at normal and 30° angulation of right molar region were also taken to see the bilateral occurrence. The same findings of RE with primary and permanent first molars were observed in right-sided radiographs also (figure 2).

Figure 1 Left mandibular primary and permanent first molars with radix entomolaris.

Figure 2 Right mandibular primary and permanent first molars with radix entomolaris.

DISCUSSION

RE can be present both with primary and permanent mandibular molars, occurring least frequently in primary first molars.¹ Bilateral occurrence of RE on mandibular molars ranges between 50% and 67%.²

In this report, a case of RE was reported with bilateral occurrence on primary first molars and permanent first molars while primary second molars were not associated with RE. However, according to the literature primary second molars show higher prevalence of RE (27.8%) as compared to primary first molars (9.7%).¹

The aetiology of development of RE is still unknown. In the literature some suggested the reason to be some external factors during odontogenesis or penetrance of an atavistic gene or racial genetic factors with high degree of genetic penetrance, as observed in some racial forms like Eskimos.³ The probability of presence of RE among molars was described by Field development theory,⁴ which states that permanent first molar is the key tooth or main site for field affecting genes for the posterior fields of the jaw. So the features present in permanent first molars have more chances of expression in the posterior field and also more the distant the tooth is from permanent first molar fewer are the features of the permanent first molar they exhibit. This may be the reason why the prevalence of RE is higher in primary second molar.⁵

The dimensions of RE may vary from a short conical extension to a mature root located distolingually with the normal root length and root canal, similar to mesial and distal roots of mandibular molars. Carlesen and Alexandersen, classified four different types of RE according to the location of cervical third of RE—in types A and B the cervical

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part is located distally with two normal components and single normal component, respectively. Type C is with mesially located cervical part and in type AC there is a central location of cervical part lingually between the mesial and distal root components.⁶ In the present case, both in primary and permanent first mandibular molars type AC RE were present.

The second and third molars could not be evaluated as the age of the child was 8 years and they were in different stages of crown development.

In this case, the anatomical root length of all the three roots (mesial, distal and RE) of permanent mandibular first molars were same at this existing stage of root development with definitive root canal in RE as in other two roots. While in that of primary first molar all three roots were completely formed and were of almost same length and defined root canal and orifice could be seen in RE.

The identification of RE is not possible only on clinical examination of the crown though presence of extra cusp or bulge can raise a doubt for the same. In the present case the clinical crowns are anatomically similar to their normal counterparts with two roots. Therefore, a thorough inspection of the preoperative radiograph is essential. In this case the patient was advised radiograph as the patient was having deep caries in left primary second mandibular molar. On thorough interpretation of the preoperative radiograph RE was observed with respect to both primary first molar and permanent first molar. To see the bilateral occurrence the radiograph of right side was also taken and RE was observed there also with primary first and permanent first molars. To confirm the location of this additional root a second radiograph with 30° mesial shift was taken for both sides.

The observation of presence and location of RE has become easier with the advent of more advanced radiovisiography and spiral CT; however, these can only be used occasionally when required because of high cost and doses of radiation. Dube *et al*⁷ observed RE in 9% of examined permanent first molars in Indian population after using spiral CT.

Though in this case no endodontic or exodontic procedure was required for teeth with RE, their diagnosis is essential for better clinical approach, to avoid procedural errors in the future if required and for continuous documentation of such anomalies in the dental literature and awareness among the dental practitioners.

Learning point

Always interpret the intraoral radiographs very carefully and completely even if the radiograph was not carried out for the tooth showing developmental anomaly. Moreover, the update of knowledge of developmental anomalies and their management is extremely important for the clinicians.

Competing interests None.

Patient consent Obtained.

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REFERENCES

- 1 Song JS, Kim SO, Choi BJ, *et al*. Incidence and relationship of an additional root in the mandibular first permanent molar and primary molars. *Oral Surg Oral Med Oral Pathol* 2009;107:56–60.
- 2 Calberson FL, De Moor RJ, Deroose CA. The radix entomolaris and paramolaris: clinical approach in endodontics. *J Endod* 2007;33:58–63.
- 3 Reichart PA, Metah D. Three-rooted permanent mandibular first molars in then Thai. *Comm Dent Oral Epidemiol* 1981;9:191–2.
- 4 Butler PM. Studies of mammalian dentition. Differentiation of post-canine dentition. *Proc Zool Soc Lon* 1939;109:1–36.
- 5 Turner CG II. Three-rooted mandibular first permanent molars and the question of American Indian origins. *Am J Phys Anthropol* 1971;34:229–41.
- 6 Carlsen O, Alexandersen V. Radix paramolaris in permanent mandibular molars: identification and morphology. *Eur J Oral Sci* 1991;99:189–95.
- 7 Dube M, Trivedi P, Pandya M, *et al*. Incidence of radix entomolaris in the Indian population—an in vitro and in vivo analysis. *J Int Oral Health* 2011;3:35–45.

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