PRIMARY MOLAR WITH EXTRA ROOT CANAL- A CASE REPORT

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ABSTRACT

A thorough knowledge about root canal anatomy and its variations is essential for performing a perfect root canal treatment not only in permanent teeth but also in primary teeth as well. Anatomical variations like presence of additional roots or root canals are rare in deciduous dentition. But a pedodontist should be aware of such variations and should be motivated to look for them in order to avoid post-operative complications. Meticulous cleaning and filling of all the root canals is essential to eliminate or reduce the microbial load in the canals. This article reports a case of mandibular second primary molar with five canals as a good example of such an anatomic variation.

Key words: deciduous teeth, pulpectomy, anatomic variation

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Introduction:

The success in root canal procedures is based on understanding the root canal system and its variations by comprehensive cleaning, shaping, and obturation of all root canals. The primary mandibular first and second molars usually have three canals which generally correspond to the external root canal anatomy. About 75% of the mesial roots in primary mandibular first molars contain two canals; whereas in primary second molars, 85% of the mesial roots contain two canals. Only 25% of the distal roots in either tooth contain more than one canal.[1] The prevalence of dental anomalies is lower in deciduous dentition than permanent dentition.[2] Tratman (1938) found three rooted mandibular molars were rare (frequency < 1%) in the primary dentition.[3] Accessory roots in primary mandibular molars, especially in second molars, were reported amongst Danish, Japanese, Chinese, Taiwanese, and Korean population groups.[4]

The present paper describes a case of primary mandibular second molar with a canal configuration rarely reported in the literature. The tooth had three roots with five root canals (three mesial canals and two distal canals). This paper may intensify the complexity of primary mandibular molar variation and is intended to emphasize clinician's awareness of the rare morphology of root canals.

Case Report

A seven year old male patient reported with the chief complaint of pain in the lower left posterior tooth region for the past two days. Pain was spontaneous and aggravated in the night. Clinical examination revealed deeply carious tooth 75. No relevant medical history was given. Radiographic examination of the tooth showed deep caries involving enamel and dentine and extending to the pulp with the presence of two mesial roots and one distal root. (Figure 1). From the clinical and radiographic findings, a diagnosis of irreversible pulpitis was made for the tooth 75, and a pulpectomy was scheduled.

Pulp tissue was completely extirpated and the floor of the pulp chamber clearly revealed four distant canal orifices. Canal exploration with a no. 10 file disclosed an additional canal that was located in the mesial root midway between the mesiobuccal and mesiolingual root canals. Instrumentation was performed in all the canals using H-file (MANI, INC, Japan) and the canals were enlarged to a size 35 using hand instruments. Normal saline irrigation was done throughout the instrumentation. The canals were dried and obturated with endoflas using compaction technique. The access was sealed with Glass ionomer Cement and a postoperative periapical radiograph was taken after obturation (Figure 2). After one week, stainless steel crown was adapted and a periapical radiograph was taken (Figure 3).

Discussion

Variations from normalcy can occur in formation, shape of the roots or number of roots and root canals.[5] Routine intraoral radiographs with different angulations help in detecting the presence of extra roots.

There have been several studies on variations in root canal morphology of primary second mandibular molars. Mann et al. reported a 5-year-old child who presented with three-rooted primary mandibular molar.[6]

Zoremchhingi et al. (2005) using computed tomography evaluated 15 primary second molars and they found one tooth having three canals in distal root.[7] Sarkar and Rao (2002) in their ex vivo study found 7.1% with three distal root canals in primary second mandibular molars.[8] Rana et al. (2011) reported a case with five root canals in grossly decayed primary second mandibular molar which was extracted and he observed three roots with five canals (three mesial and two distal) with congenital bilateral missing of mandibular permanent second premolar (35 and 45) tooth bud. [9] Yang et al. (2013) evaluated 487 second mandibular molars using CBCT observed seven categories of variants in the root canal anatomy of primary mandibular second molars.[10]

The rarity of reports of anomalous root patterns in primary teeth may be more apparent than real. This is because there is only a limited time between the formation and resorption when radiography may indicate their presence and in many cases where primary teeth are extracted the anomalous root pattern is not evident due to root resorption that had taken place.

Conclusion

The knowledge of anatomic characteristics and their possible variation is essential for a successful endodontic treatment. Examination of clear radiographs taken from different angles and careful evaluation of the internal anatomy of teeth are needed. Knowledge of unfamiliar variations like the case discussed is important as a nontreatment of one additional root or root canal can lead to failure of root canal procedures. The present study motivates the practitioners to explore the extra canals present in primary teeth and utilize the 3D imaging systems in addition to radiographs to achieve a better endodontic outcome.

Fig 1

Fig 2

Fig 3

References

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