VARIATION IN ROOT CANAL MORPHOLOGY IN DECIDOUS FIRST MANDIBULAR MOLAR IN SOUTH INDIAN CHILDREN

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ABSTRACT

AIM

To determine the variation in root canal anatomy of deciduous first molar in the south Indian children.

OBJECTIVE:

At times clinicians are challenged with variation in root canal anatomy. This article attempts to list out the possible variation in root canal anatomy of deciduous first mandibular molar.

BACKGROUND

Undetected extra roots or root canals are a major threat for failure of endodontic treatment. Failure to recognize a variation in the roots of deciduous first molar which may lead to incomplete debridement of the root canal system and eventually treatment failure.

REASON:

The root canal anatomy should be clearly understood for successful puplectomy and endodontic treatment.

INTRODUCTION:

Endodontics is defined as the study and practice of biology of the normal dental pulp and the etiology, along with diagnosis, prevention and treatment of diseases and injuries of the dental pulp along with associated periradicular conditions. Endodontics has been evolved tremendously in the past years thus helping in improvement the quality of dental treatment.[1] The dental pulp is the part which is present in the center of a tooth made up of living connective tissue and cells called odontoblasts. The dental pulp is a part of the dentin–pulp complex (endodontium).[2]The vitality of the dentin-pulp complexes very important, both during health condition and even after injury, which depends on pulp cell activity and the signaling processes that regulate the cell's behavior.[3]

The roots of the primary teeth are formed completely approximately 16 to 20 months following eruption.[4]The deciduous mandibular molar have five cusps mesiobuccal, mesiolingual, distofacial, distolingual and distal cusp. It is pentagonal shaped from occlusal view. It has two roots from buccal view - distal root and mesial root. Distal root is straight and is slightly curved distally. mesial root has more flutings ,broader buccolingually with a blunt apex.[5] The purpose of this study is to determine the length of the root canals of primary mandibular molars, and to examine the root canal anatomy which is very useful in various endodontic procedures.

MATERIALS AND METHODS:

Thirty deciduous mandibular molar were utilized for the study .Only primary teeth of mandibular molars were used. The teeth collected included carious teeth but it was devoid of obvious root resorption. The age and gender of the patients were not known. Soft tissues on the surface of the extracted primary molars were removed and cleaned. Debris on the tooth surface and in the carious cavities was washed out with tap water. No attempt was made to introduce burs or files into the inside structures of the tooth, including the pulp chamber and root canal. To find out the shape and no of root canals in the collected teeth was washed in running after cleaning in water was then stored in 10% formalin until required for the study. When taken out from formalin the teeth was washed again in running water and mounted in wax. All the teeth was then exposed to X-ray and radiographs were taken.

RESULT:

DECIDOUS FIRST MANDIBULAR MOLAR			
TOTAL NO OF TEETH	30		
	ONE ROOT	TWO ROOT	THREE ROOT
NO OF TEETH	9	15	6
MEAN	9	15	6
STANDARD DEVIATION	0	0	0
PERCENTAGE	30%	50%	20%

The resarch states that 15 of the selected teeth was two rooted accounting for a half of the total percentage. Six of the total thirty selected teeth had three roots accouting for 20 percent. There were nine single rooted teeth among 30 collected teeth accounting for a percentage of 30 with an average of 9.

DISCUSSION:

- When fusion of these two roots occurred it never means that the canals must also be fused.
- The mesial root canals of the decidous mandibular molars showed more frequent and greater variations than did the distal root canals of the decidous molar teeth.
- The primary root canal has a ribbon-shaped root canal system and the apical portion is less constricted without uniform tapering of the root canals.
- In the mandibular molars the distal root is invariably longer than the mesial root.
    - It is also not uncommon to have two well developed and separated mesial roots in the lower primary molars but this may be more prevalent in the second molar.[6]

Pulp differentiates from the dental papilla at about eighth week of gestation. After the. At the time enamel and dentin first layers are formed, the nerve fibers extend into the subodontoblastic layer. Subsequently nerve fibers increase in the center portion of developing pulp inner and outer enamel differentiate into stellate shaped fibroblasts. After the inner and enamel organ cells differentiate into ameloblasts, the odontoblasts differentiate leading to dentin production. Few large myelinated nerves are found in the pulp until the dentin of the crown is well advanced. At that time the nerves reach the odontogenic zone in the pulp horns. The sympathetic nerves, however, follow the blood vessels into the dental Paula as the pulp begins to re organize. [7]

Continuous deposition and resorption of secondary dentin may contribute to altered number and shape of root canal. It has to be studied for effective management and endontic treatment.[8]

CONCLUSION:

The hard tissue of the human dental pulp can occur on numerous configurations and shapes. A thorough knowledge of tooth morphology, proper access preparation, careful interpretation of angled radiographs, and a detailed exploration of the tooth interior are essential prerequisites that has to be considered for successful treatment outcome. Magnification and illumination are aids that must be utilized to achieve this goal. A thorough understanding of the complexity of the root canal system is essential for understanding the principles and problems of shaping and cleaning, for determining the apical limits and dimensions of canal preparations, and for performing successful microsurgical procedures.

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