



ISSN NO. 2320-5407

Journal homepage: <http://www.journalijar.com>

INTERNATIONAL JOURNAL
OF ADVANCED RESEARCH

RESEARCH ARTICLE

RARE ANATOMICAL VARIATION: ONE ROOT-ONE CANAL IN MANDIBULAR 2ND MOLAR: A CASE REPORT.

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Manuscript Info

Manuscript History:

Received: 15 January 2016
Final Accepted: 22 February 2016
Published Online: March 2016

Key words:

c-shaped canal, rare anatomy,
mandibular second molar.

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Abstract

Consistently high levels of success in endodontic treatment require an understanding of root canal anatomy and morphology. c-shaped canal configuration is rare anomaly occurring in tooth. Out of all the different configuration of c-shaped canal single canal in single root is rather an uncommon configuration. which requires extra care during cleaning & shaping and obturation.

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Introduction:-

Success in any complex situation is mostly achieved by through knowledge of the complexity of the situation, skill and patience to solve the problem. This is very true in case of the root canal treatment while dealing with rare occurring root canal anatomy. A thorough knowledge of the anatomy, its variation is essential for cleaning and shaping & obturation of the root canal.¹

C-shaped root canal morphology was 1st reported by cooke and cox in 1979. Instead of having multiple orifices c-shaped canal have ribbon shaped canal starting in mesiolingual turning from buccal aspect and ending in distal aspect of pulp chamber, which makes it to have 180° arc or more , mostly occurring in mandibular molar (Cohen & Burns 1994). C-shaped configuration is mostly seen in maxillary 1st molar and mandibular 2nd molar. It is more commonly seen in Asian population with 30% of occurrence rate (gulabiwala et.al. 2001). C-shaped root canal is not uncommon occurrence as it is reported in endodontic textbooks but single root with single canal is rare and reported to be of only 1.3% occurrence in the population (weine et.al.)².

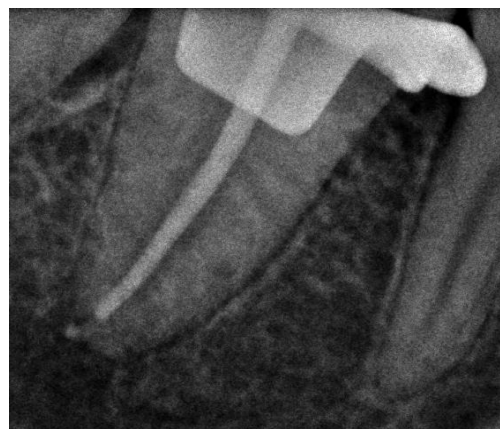
Case report:-

A 48 years old female patient reported to the Department of Conservative Dentistry and Endodontics with complain of pain in left mandibular second molar. The medical history was non-contributory. On examination revealed a deep caries. The tooth on examination revealed a deep caries. The patient had pain on percussion. Intra oral periapical radiograph revealed radiolucency in the crown involving the pulp suggestive of a pulpal involvement. The root canal morphology confirmed the presence of a single root with a single canal.

After achieving anesthesia access opening was done under rubber dam. After pulp extirpation, a single round orifice was located in the middle portion of the floor of the pulp chamber. Working length was determined, cleaning and shaping was completed by hand instruments along with RC Help (Prime Dental Products, Thane, India). The root canals were copiously irrigated with 3% sodium hypochlorite and saline was done throughout the procedure. A snugly fitting 6% no 40 gutta percha cone was selected as master cone. Gutta-percha was removed leaving apical 3rd for backfilling of the root canal. The rest of the canal was obturated with thermoplastised gutta percha (E & Q master (META BIOMED)). Post endodontic restoration was done with composite resin.



Pre-operative radiograph



Master-cone



Gp removed for backfilling



Post-obturation

Discussion:-

For successful root canal treatment a thorough knowledge of the root canal anatomy is required. Clinically with anatomic variations, treatment can be performed with conventional or rotary instrumentation and obturation techniques valuing technical and biological principles. Endodontic success in teeth with variations in the number and morphology of canals needs a correct diagnosis and careful clinical and radiographic inspection.

Usually mandibular molars have 2 roots three canals. Whenever there is disturbance in fusing of the Hertwig's epithelial root sheath on lingual or buccal surface, it is the main cause of the development of the C-shaped root canal.³ Melton et. al in 1991, developed classification for C-shaped root canal. Fin et.al in 1994 modified this classification for better understanding of the configuration.⁴

C-shaped canal system may always have a fused root with a longitudinal groove in the middle of the root, radiographically^{5,6}. C-shaped canal's basic feature is the presence of fin or web connecting the individual canals. The morphological variant of single root and single canal is easily detected in routine radiographs. In the present case the morphology was the C4 type of the modification of the Milton's classification given by fin.

In the present case after access cavity preparation, on observation of the pulpal floor only one canal with a round orifice was located, suggestive of the presence of a single canal. Further exploration of the pulpal floor did not reveal presence of any additional orifice opening.⁷

Biomechanical preparation was done with hand files with copious irrigation to ensure complete removal of debris. Obturation of the canal was done using thermoplasticized injectable gutta-percha along with a master cone to prevent extrusion of gutta percha beyond the apex. Thermoplasticized injectable obturating technique ensures compact obturation of the wide canals without voids. Any aberration existing in these canal systems can be well obturated by thermoplasticized obturating systems along with warm vertical compaction which provides better flow of gutta percha.⁷

Reference:-

- 1) K. S. Al-Fouzan. C-shaped root canals in mandibular second molars in a Saudi Arabian population. IEJ 2002; 35: 499-504.
- 2) Raisingani D, Gupta S, Mittal P, Khullar P. Anatomic and Diagnostic Challenges Of The C Shaped Root Canal System. Int J Pediatr Dent 2014;7(1):35-39.
- 3) Barnett f. mandibular molar with single canal. Endodentromatol 1986; 2(2):79-81.
- 4) Melton Dc (Department Of The Endodontics, Iowa City), Krell kv, Fuller mv. Anatomical and histological features of c-shaped canal in mandibular molar. J endod 1991;17(8):384-388.
- 5) Wei Fan, et al. Identification of a C-shaped canal system in mandibular second molars-Part III: Anatomic features revealed by digital subtraction radiography. J Endod 2008;34 : 1187-90.
- 6) Yi Min, et al. C-shaped canal system in mandibular molars part III: The morphology of the pulp chamber floor. J Endod 2006; 32 : 1155-59.
- 7) Shetty N, Singh V, Rijal S, Single Rooted Mandibular Second Molars With Single Canal: Rare Occurrence. Endodontology;55-59.