



**ORIGINAL RESEARCH PAPER**

**Dental Science**

**ENDODONTIC MANAGEMENT OF MANDIBULAR SECOND MOLAR WITH SINGLE ROOT AND SINGLE CANAL- A CASE REPORT**

**KEY WORDS:** Aberrations, mandibular second molar, morphology

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**ABSTRACT**

Aberrations in root canal anatomy seems to be a challenging task to endodontic diagnosis and treatment. This case report describes the frequency of known anatomical variations to include teeth with lesser number of roots and canals. Clinicians should be aware that not only extra roots and root canals there are possibility of lesser number of roots and root canals than the normal morphology. Thus the intention of of this case report is to highlight endodontic management of mandibular second molar with single root and canal.

In this case report, we discussed endodontic therapy of a mandibular second molar with a single root and a single canal. Patient complains of pain during hot and cold intake which intensified during lying down position. After doing radio graphic examination and pulp testing, a diagnosis of acute irreversible pulpitis was made and the teeth were endodontically treated. The intra oral periapical radio graphs showed conical root (Fig1), Hence, multiple angulated radiographs were taken, which revealed a single root and a single root canal. After taking patient concern endodontic access cavity was performed. The canal patency was achieved with a stiff 10 K file. Working length was established (fig 2) with the help of electronic apex locator (Root ZX mini ) and confirmed with a radiograph. Cleaning and shaping was performed using a crown down pressure less technique using suitable sized ISO K file. 0.5% sodium hypochlorite solution, EDTA and saline were used for irrigation and recapitulation. 17% aqueous EDTA solution was used as a final flush. Master cone was selected(Fid 3) The canals were dried with sterile absorbent points and then coated with tubli seal sealer and obturation was done with gutta percha using lateral condensation technique. (Fig 4).



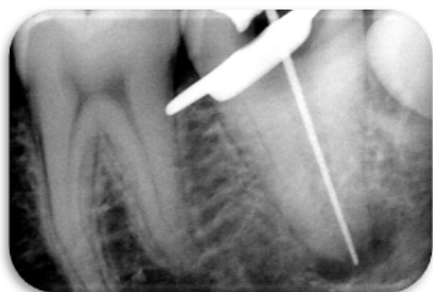
**Fig-3 : Master Cone**



**Fig-4 : Post Obturation**



**Fig-1: Preoperative**



**Fig-2 : Working length**

**Discussion-**

A thorough knowledge of root canal anatomy and morphology is essential for achieving success in endodontic treatment. Failure to recognize variations in root or root canal anatomy can result in unsuccessful endodontic treatment. Mandibular second molars usually have two roots and three root canals but variations in the number of roots as well as canal morphology are not uncommon<sup>2</sup>. In case of C-shaped canal, radiograph always reveals a fused root with a longitudinal groove in the middle of the root<sup>1</sup>. The basic feature of c-shaped canals is the presence of fin or web connecting the individual canals<sup>5</sup>. First description of the term C-shaped root canal was mentioned in the year 1979 which are commonly found in permanent mandibular second molars but they can also be found in maxillary first molars, maxillary second molars, and mandibular first and second premolars, third molars, as well as in mandibular first molars<sup>2</sup>. An invitro study done by Weine et al

reported incidence of one root with one canal in mandibular second molar was 1.3%<sup>3</sup>. Peikoff et al reported 3.1% of endodontically treated maxillary second molars with one root and canal<sup>4</sup>. Usually, the mandibular second molars have two mesial canals (MB and ML) and one distal canal similar to the mandibular first molars<sup>7</sup>. Slowey et al., reported that the mesial roots of the mandibular second molar has a higher incidence of one canal (14%) wherein they may have a common foramen or may exist separately as two or more foramina<sup>8</sup>. In this case their was bilateral occurrence of conical roots was reported which is in accordance with Sabala et al, who stated that the existence of very rare anatomical aberrations is probable to exist bilaterally<sup>6</sup>. In this case initial evaluation of the multiple radiographs suggested the presence of single root with a wide canal space suggesting that there may be c-shaped configuration of canals. 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. Endodontic surgical microscopes are helpful adjuncts which may reveal and help to manage this type of complexities.

### Conclusion

A thorough knowledge of the complexity of the root canal system is essential for successful endodontic treatment. Preoperative radiographic imaging in multiple angulations is helpful in identifying this rare canal configuration which can facilitate more effective canal identification and unnecessary removal of healthy tooth structure in an attempt to search for missing canals.

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