

Rarest of the rare case: Mandibular canine with 2-1-2 canal anatomy**Rupali Balpande¹, Sarvesha Bhondwe², Vishal Mahajan³**

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ABSTRACT:

This is the case which showed root canal treatment in mandibular canine with 2-1-2 canal anatomy. Unless the practitioner is familiar with the morphology of the roots of all teeth, and the associated intricate root canal anatomy, effective debridement and obturation may be impossible.

Keywords: 2-1-2 mandibular canine anatomy, Mandibular canine, Root canal anatomy.

INTRODUCTION

Endodontic treatment may sometimes fail because of the morphological features of the tooth which adversely affects the treatment procedures. Many of the investigations carried out have found various anatomical variations associated with mandibular canine. About 15% of the cases of mandibular canine have two canals and two roots.¹

CASE REPORT

A 58 year old male presented with moderate pain in the right mandible. The diagnostic radiograph showed severe attrition involving enamel, dentin and the pulp. In the apical portion the radiograph showed PDL widening. RVG was taken in the mesiobuccal and distobuccal direction to investigate the exact canal anatomy. RVG clearly showed 43 with two canals meeting in the middle of the root and divides from here up to the apex of the tooth with 43.

Access was achieved using a round diamond bur. The pulp chamber was opened and access prepared wide as compared to the normal canine access opening to locate the buccal and the lingual canal orifices. Working length was established with the help of RVG (Figure 1). During the working length determination #20 two files were inserted in the buccal and the

lingual canals and found that only one of the file could reach the apex of 43 tooth when simultaneously files were inserted. So taken into consideration of this, RVG was taken and came to know both canals meeting in the middle of the root (Figure 1). So first file was inserted and the working length was measured which was 21mm and the file which was inserted in the lingual canal showed a working length of 19.5mm. Accordingly canal space were prepared and cleaned with the help of stainless steel K-file upto #35 using a step-back instrumentation technique.² 5.25% of solution of sodium hypochlorite and 17% of EDTA were alternatively used as irrigants at every change of the instruments.

The canals were filled with the help of sectional obturation technique.³ No. 35 guttapercha point was taken as master cone and inserted upto full working length in the buccal canal and No.30 K-file was inserted in the lingual canal (Figure 2 & 3). After the removal both master cones from buccal and lingual canals respectively, the insertion of #30 file was measured upto the meeting point of the master cone (Figure 4). The master cone was cut from that indentation mark and coated with AH plus sealer and sectional obturation was done with buccal canal upto the meeting point of buccal and lingual canals (Figure 5).



Figure 1: Working length



Figure 2: Master cone IOPA with 43- full length GP inserted in lingual canal while buccal canal GP left shorten.



Figure 3: Master cone IOPA with 43- full length GP inserted in buccal canal while lingual canal GP left

Now the master cone for the lingual canal was selected and inserted into the canal and RVG was taken. The same was coated with AH plus sealer and the lingual canal was obturated by using conventional lateral condensation obturation technique. The remaining buccal canal was obturated with the help of previously cut master gutta percha point and the accessory cones were inserted. In this way tooth 43 was obturated (Figure 6).



Figure 4: Markings on the master guttapercha cone produced by insertion of a file into an adjacent orifice



Sectional obturation with lingual canal



Completed obturation

DISCUSSION

Outcome of the endodontic treatment widely depends upon the thorough knowledge of canal anatomy, their cleaning, shaping and 3 dimensional filling of the root canal.⁴ Variations in the root canal anatomy pose the difficulty in the outcome of the root canal treatment. The objective of the root canal treatment depends upon the elimination of the infection from the root canals and prevention of re-infection.⁵ Radiographs in different angulations reveal the anatomy of roots and root canal. Hence, it's mandatory to take additional radiographs. Bifurcations in the cervical and middle thirds may be observed radiographically. In mandibular canines, bifurcation at these sites has been shown to occur in 43.1% of the situations.^{6,7} In this case, mandibular canine clearly showed two canals meeting in the middle of the root and divide from here up to the apex of the tooth with leaving as two separate foramen (2-1-2 canal anatomy). Identification of the second canal is even more difficult due to overlapping of radiographs. Therefore, the radiographic image should be carefully analyzed in order to interpret and identify details that may suggest the presence of bifurcations or trifurcations, such as sudden root canal discontinuity.⁷

CONCLUSION

It is the assumption of the various clinicians that a given tooth contains specific number of

roots and root canals, for example mandibular canine with one root and one root canal. But clinicians should be aware of the anatomical variations in the teeth that they are managing and should never assume that the canal systems are that simple.

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