

CASE REPORT

DIAGNOSIS AND TREATMENT OF A RADICULOUS PREMOLAR

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ABSTRACT:

Treatment of any endodontic case requires meticulous diagnosis and treatment plan especially keeping in mind the possible Anatomic variations that can be encountered. Knowledge about handling such cases should be acquired for a successful treatment outcome. Present case report aimed to report diagnosis and treatment of three rooted maxillary premolar.

Key Words: Anatomic variations, three rooted maxillary premolar and Treatment.

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INTRODUCTION

The main objective of endodontic therapy is to debride and disinfect the root canals of a tooth. To achieve this goal, the dentist should acquire knowledge of morphologies and variations in morphology of different teeth. In a tooth undergoing root canal treatment such variations should be anticipated. Inability to treat every tooth uniquely will lead to failure of endodontic therapy.

Inadequately treated and missed canal impact the outcome of root canal. The classic studies like the Washington study¹ associate 3% cases of endodontic failures to missed canals. However more recent studies report a higher incidence. Hoen and Pink² evaluated 1100 failing endodontic cases and found a 42% incidence of missed canals associated with failure cases. The difference in incidence is because of the different methodologies of investigations. Hoen and pink² clinically evaluated these cases under magnification of at least 3.25 power.

CASE REPORT

A 30 year old female patient with non contributory medical history reported to the Department of Conservative Dentistry and Endodontics with chief complaint of pain in her left side upper tooth since one day. Pain was spontaneous, throbbing and did not subside by taking medication.

On Clinical examination a large carious lesion was seen in relation to 24. The tooth was tender on percussion. The radiograph revealed a carious lesion in proximity to pulp chamber of the tooth.

Root canal therapy was initiated. The tooth was isolated with rubber dam and access cavity was made. The access cavity was modified to have T shape outline by moving the bur from the buccomesial to bucco-distal end of access cavity (Balleri et al. 1997)³. This was done to locate the third orifice. But in the present case only one large buccal orifice was seen. When buccal orifice was explored with the patency 10 number file, it was observed that file took two directions one to the mesial and one to the distal. This indicated presence of one canal dividing in two or a bifurcation of root.



Figure 1: Preoperative radiograph 24.



Figure 2: Access Opening 24

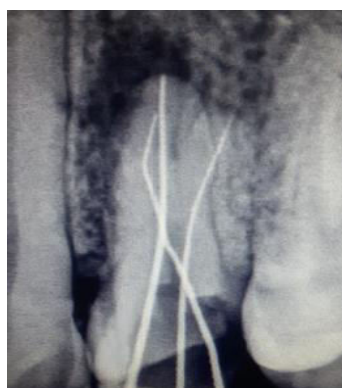


Figure 3: Working length radiograph.



Figure 4: Master cone radiograph



Figure 5: Obturation 24

Meticulously observing the radiograph and exploring clinically, led to the conclusion that the buccal root of the premolar bifurcated in the coronal half of the root. The coronal half of the buccal canal was flared and enlarged before taking the working length for convenience form. The working length radiograph confirmed the presence of three roots. Canals were then prepared by hand filing till 15 number file. Combined hand and rotary protaper was used in bifurcating buccal root to reduce strain on the rotary files. The canals were prepared upto F2 protaper files. Copious irrigation with 1% sodium Hypochlorite was used during biomechanical preparation.

Obturation was completed with F2 protaper Gutta Percha points and AH plus sealer. Obturation of the dividing buccal root was done meticulously. First one master cone was placed to full length. This cone was cut at the bifurcation level by a heated plugger creating space coronally for the placement of the other master cone. The second cone was then cut at the orifice and plugged with a hand plugger to seal the second root and the common coronal half or the trunk of the bifurcated buccal root. This was followed by obturation of the third or the palatal root.

DISCUSSION

The most common canal configuration for the maxillary premolar is Vertucci's Type IV in 60-65% cases. Other canal configurations seen are Vertucci's Type V in 6-7%, Type I in 8-9% and Type II in 16-18% cases.⁴ Maxillary premolars can also have three root canals in 2.5-5% cases. This root disposition is so similar to adjacent maxillary molars that these premolars are called small molars or 'radiculous'.⁴

Vertucci and Gegauff⁵ found 5% of 400 maxillary first premolars to have three canals: 0.5% existed as three canals in a single root, 0.5% existed as two canals in one root and one canal in a second root, and 4% existed as one canal in each of three separate roots.

The maxillary premolars with three root canals , mesio-buccal , disto-buccal and palatal , is similar to the adjacent maxillary molars, and therefore called as small molars or Radiculous (Maibaum 1989⁶, Goon 1993⁷).

Diagnosis and Identification of Radiculous:

- a) High quality preoperative radiograph is essential before root canal treatment of a tooth. In case of a three rooted premolar Sieraski et al. Observed that mesio distal width of midroot portion is equal to or greater

than mesiodistal width of crown.⁸ Also any sudden narrowing or even disappearance of pulp space indicates division of root.

- b) Clinically, a flattened buccal gingival collar as opposed to normal parabolic shaped may hint presence of bifurcation (Two buccal roots).
- c) Meticulously observing the access opening especially with the aid of magnification helps locating extra canals. Presence of eccentric buccal orifice in the access opening also hints the presence of second buccal canal.⁹

CONCLUSION

Morphological variations in pulpal anatomy must be always considered before beginning treatment. Careful clinical and radiographical examination is essential for successful endodontic treatment.¹⁰

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