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CASE REPORT

Treat the Hidden

Anitha Rao S[1] and Chandra Sekhar V[2]

Department of Conservative & Endodontics
Mamata Dental College & Hospital
Khammam- 507 002; Andhra Pradesh, India

Senior Lecturer[1]
Professor & Head[2]

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ABSTRACT:

Anatomical variations must be considered in clinical and radiographical evaluations during endodontic treatment. The possibility of three roots in maxillary first premolars is quite low; access cavity modifications may be required for stress free entry to complex anatomy . This case report describes the Endodontic treatment of maxillary first premolar with three separate roots.

Key words: ***Missing Teath, Modified Teath, etc.***

INTRODUCTION

To achieve a higher degree of clinical success in endodontic therapy, biomechanical instrumentation and obturation of the root canal system are required. These objectives can be achieved by detecting the anatomical variations of the teeth under treatment, because one of the main reasons for failure in root canal therapy is the lack of knowledge about the anatomy of root canals.

Extra roots are an additional challenge, which begins at case assessment and involves all operative stages, including cavity design, canal access, localization, cleaning and shaping of the root canal system.

The Maxillary first premolar typically has well-formed roots (56%) that divide in the middle third of the root & lie buccal and lingual to one another. About 40% have only one root containing two canals (type IV) that then unite in a common foramen. Three -rooted maxillary first premolars are uncommon (0.5-6%)[1] generally with one canal in each of the three roots. [2]

Visualization of three- canalled maxillary premolars on preoperative radiographs can often be difficult. The earlier these complex root canal configurations are anticipated, the more likely one can properly manage intracanal preparation and filling procedures.

The anatomy of maxillary premolars with three root canals, mesiobuccal, distobuccal and palatal is similar to that of adjacent maxillary molars, and they are therefore sometimes called "small molars" or " radiculous."[3]

This article describes a clinical case of three rooted maxillary first premolar that was endodontically treated.

CASE REPORT

A 24yr old male patient with a non- contributory medical history appealed the Department of Operative Dentistry and Endodontics. He had a

Email for correspondence:
anidental@yahoo.com

history of spontaneous pain in the tooth 25. The tooth was sensitive to cold and electric pulp testing with response indicating irreversible pulp damage. A preoperative peri apical radiograph confirmed the presence of a carious lesion on the distal surface of maxillary first premolar. There was no evidence of peri apical radiolucency (Fig 1).

The patient was given a local anaesthesia. Tooth was isolated, all the caries was removed. The canals normally lie close to each other and are often covered by a projection of cervical dentine. Thus, an Endo Access bur number A0164 (*Dentsply Maillefer*) was used to modify the edges of the access opening in the tooth 25, in order to make a triangular conformation at the base, in the buccal direction.[4] A uniform cut was made with a slow speed diamond abrasive at the buccal- proximo angle from the entrance of the buccal canals to the cavo-surface angle, resulting in a cavity with a T-shaped outline.[5] After removing the coronal pulp, the buccal canals were explored with sizes 8 &10 files, resulting in clinical and radiographic confirmation of three canals. The working lengths were estimated using an apex locater and then confirmed with a radiograph (Fig 2).

The buccal canals were prepared manually upto size 15 K files, with copious irrigation with 2.25% sodium hypochlorite between each file. This was followed by the use of rotary nickel - titanium files with sizes 1- 6 taper .04 & .06 of the Profile Series 29 (*Dentsply, Tulsa, Ok*). The canals were dried with sterile paper points and temporized with cotton pellets and IRM (*Caulk/Dentsply Milford, DE).* One week later the patient was free of pain. All the canals were irrigated dried and a radiograph with a master cone length. The canals were obturated by lateral condensation with AH Plus sealer (*Dentsply,De Tray, Konstanz, Germany*). A post obturation radiograph was taken (Fig 3 & 4).

DISCUSSION

For a successful root canal treatment, it is essential to clean and shape the root canals properly before a hermetic filling. Visualization of three-canalled maxillary pre-molars on preoperative radiographs can often be difficult.[6] High quality radiographs and their careful examination are essential for the detection of the additional root canals. *Walton* recommended the use of two diagnostic radiographs. If a radiograph shows a sudden narrowing or even a disappearing pulp space, the canal diverges at that point into two parts that may either remain separate or merge before reaching the apex.[7] If an eccentric orifice found, at least one more canal is present and should be searched for on the opposite side. A third canal should be suspected clinically when the pulp chamber does not appear to be aligned in its expected bucco-palatal relationship. If the pulp chamber appears to deviate from normal configuration and seems to be either triangular in shape or too large in a mesiodistal plane, more than one root canal should be suspected. In three rooted maxillary premolars, the buccal orifices are close to each other that are hard to locate. When confronted with unusual tooth anatomy as three rooted maxillary premolars, good illumination and magnification can make treatment easier. The three -canalled maxillary premolar requires an access cavity modification into a "T" shaped, this allows good access to each of the buccal canals.[7,8]

An apex locator was used to estimate the working lengths prior to establishing a working length radiographically. The use of an apex locater improves the chances of estimating the correct length first time, especially when canals are likely to be superimposed on a radiograph.

CONCLUSION

The knowledge of variations will assist the dentist/Clinicians in reaching conclusions when diagnosing and treating endodontic cases. Access cavity refinements may be required for stress- free entry to complex anatomy. The possibility of presence of multiple canals and additional roots (complex anatomy) may be predictably managed following its identification and negotiation.

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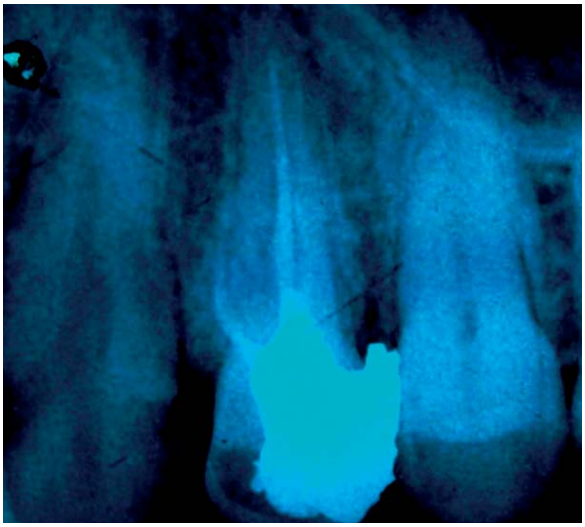
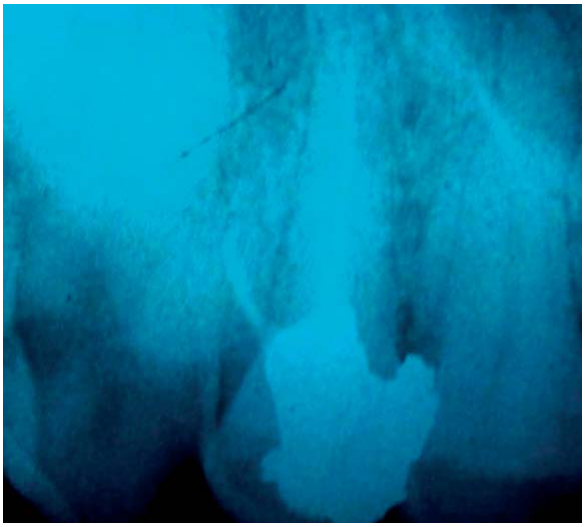
Figure 1 - Iopa Showing A Carious Lesion Without Periapical Radiolucency

Figure 2 - Determination of Working Length





Figures 3 & 4 - Post Obturation Radiographs