

Case Report

Mandibular Incisor With Two Canals: A Case Report

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Abstract

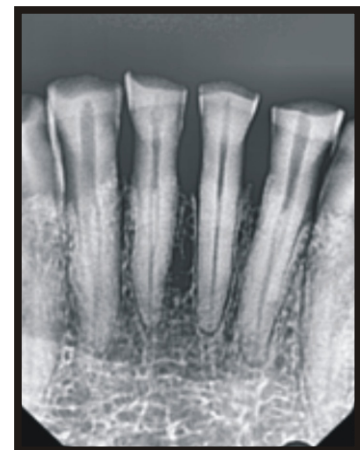
Root canal treatment is a technically demanding procedure especially in the case of mandibular incisors where the anatomy is extremely variable. The prevalence of second canal in mandibular incisors is as follows: right central incisor - 33.5%, left central incisor - 30%, right lateral incisors - 33.5%, left lateral incisor - 36.5%. Type 1 Vertucci configuration was most prevalent, followed by type 3, type 2, type 5 and type 4 in that order.

Keywords: Lower lateral incisor, Two canals, Unusual anatomy.

Introduction

A thorough understanding of root canal anatomy and morphology is required to achieve high levels of success in endodontic treatment.¹ Failure to recognize variations in root or root canal anatomy can result in unsuccessful endodontic treatment.¹ Hence, it is imperative that the clinician should be well informed and alerted to the commonest possible variation.² The morphology of mandibular central and lateral incisors is very similar and is not as simple as it may appear to be on standard periapical radiographs. It may be complicated by the presence of bifurcated and lateral canals; in some cases, these canals may rejoin to form a single canal again. Undetected canals are the major cause of failure of this treatment. Incomplete removal of all the irritants from the pulp space may increase the possibility of treatment failure.⁴

since last 15 days. Clinically attrition involving pulp was present w.r.t 32, with no sinus tract opening Patient had no relevant dental history. Radiographically attrition approaching pulp and periodontal ligament widening w.r.t 32 was seen. Tender on percussion was positive w.r.t 32. Diagnosis- Asymptomatic irreversible pulpitis and symptomatic apical periodontitis w.r.t 32. RCT was advised to the patient w.r.t 32 and her consent was taken.



Case Report

46 years old female patient reported in the Department of Conservative Dentistry and Endodontics, Inderprastha Dental College and Hospital with a chief complaint of pain on biting in the lower left front tooth region

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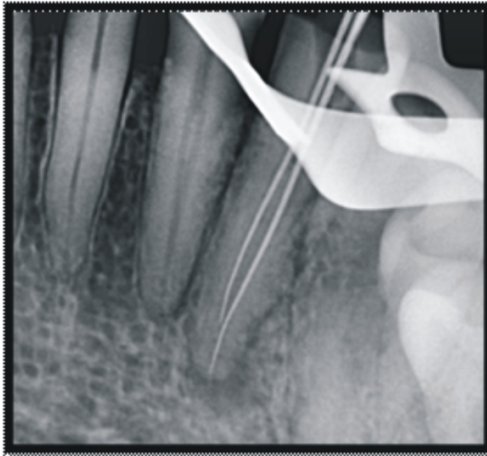
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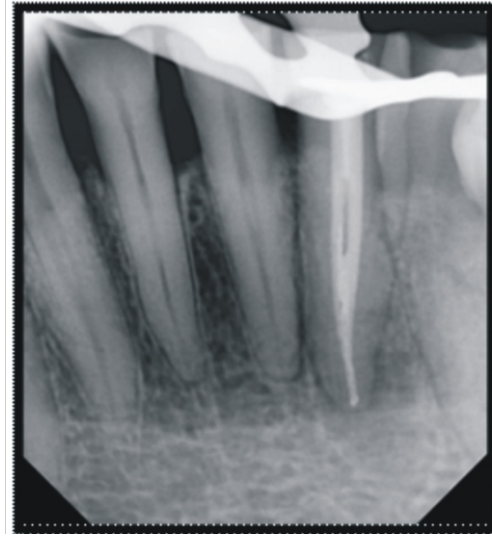
Clinical Procedure

• Under rubber dam isolation access was prepared with Endo access bur (Dentsply Sirona). First the buccal canal was located, but it was a very constricted canal and it was lying more towards the buccal wall of the tooth so, the access was modified and widened lingually and with Endo Z bur (Dentsply Sirona pvt ltd) which revealed the presence of a lingual canal with the use of DG 16 explorer. And, then it was confirmed radiographically. Canal patency was achieved by using 10K Files (Dentsply Maillefer, Switzerland) in both the canals, working length was determined using apex locator (Coltene Canal Pro CL2i Endomotor with Apex Locator) and later confirmed by radiographs.

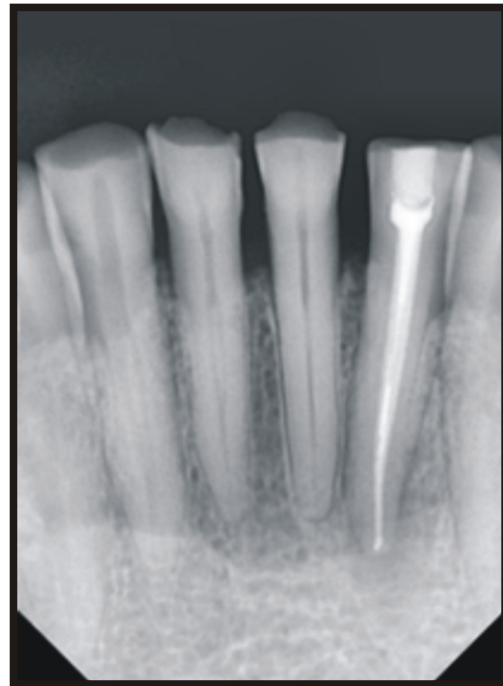


Glide path was achieved with 15K and 20 K files and canal shaping was done with Neoendo flex rotary files (Orikam Healthcare, India) in the sequence of #17(4%), #20(4%) and #25(4%) buccal canal and till #20(4%) in lingual canal. Irrigation was performed using normal saline (Nirma Pvt limited, Gujarat, India), 5.25% sodium hypochlorite solution (Vishal Dental Products, Mumbai, India). 17% Ethylene diamine tetra acetic acid gel (Avue prep) was used with each filling and then access cavity was closed with temporary restoration (Tempfil-G, Shivam industries, Jammu, India). After that patient was recalled next day and the temporary restoration was removed, then the canal was again irrigated with saline and then were dried with absorbent paper points (Dentsply Maillefer, Switzerland) and calcium hydroxide dressing was given and access cavity was closed with temporary restoration again (Tempfil-G, Shivam industries, Jammu, India). After 7 days patient was recalled and tooth was asymptomatic and the temporary restoration was removed and canal was again

irrigated using saline and sodium hypochlorite solution. Obturation was performed with #25(4%) guttapercha as master cone in buccal canal and #20(4%) in lingual canal, with Adseal sealer (Meta Biomed).



After completion of root canal treatment, the access cavity was restored using Resin composite (IvoclarTe-Econom Plus)



- Vertucci Classification:- Type II
- Weine Classification:- Type II
- Ahmed et. al. :- ¹32²⁻¹

Discussion:

Knowledge of anatomic variations is essential because endodontic success is related to a thorough debridement of the root canal system.³ Successful and predictable endodontic treatment requires knowledge of biology, physiology and root canal anatomy. Teeth with extra roots and/or canals pose a particular challenge. The inability to identify and treat these additional root canals may cause treatment failures.³ A well-designed access preparation is essential for a good endodontic result. Without adequate access, instruments and materials become difficult to handle properly in the highly complex and variable root canal system.¹ Proper access cavity preparation provides straight or direct line access to the apical foramina or at least to the initial curvature of canal to locate all root canal orifices and it also conserves sound tooth structure. Mandibular incisors because of their small size and internal anatomy may be most difficult access cavities to prepare. Complete removal of the lingual shoulder is critical, because these teeth often have two canals that are buccolingually oriented and lingual canal most often is missed.⁶ To avoid missing this canal, the clinician should extend the access preparation well into cingulum gingivally, which, if present, is located directly beneath it. When there are two canals, the buccal canal is the easiest to locate and is generally straighter than the lingual canal, which is often shielded by lingual shelf.⁷ Careful examination of preoperative radiographs can aid in locating additional canal or roots. Thus, root canal therapy of these teeth should be carried out by using X-rays from different angulations.⁴ Various methods like visualizing the dentinal map and canal bleeding points, using magnification, ultrasonic tips, staining the chamber floor with 1% methylene blue dye,

performing champagne bubble test, using DG-16 probe and Cone beam computed tomography (CBCT) imaging will help in identifying the missed canal.⁵

Conclusion:

A clear understanding of pulp anatomy and the variations that occur in it are essential if effective cleaning, shaping and obturation of the pulp space are to be achieved. Clinicians should be aware of anatomical variations in the teeth they are managing and should never assume that canal systems are simple. A thorough knowledge of the tooth and root canal morphology, clinical exploration, and detailed radiographic interpretation as well as use of advanced radiographic technique may be helpful in detecting root canal aberrations and to achieve success.

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