

## Case Report

### Incidence of two canals in mandibular anterior in Jharkhand Population- A case report.

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#### **ABSTRACT:**

The root canal system is complicated and has many anatomical variations among different populations. It is so important to understand the morphology of root canal system before any endodontic procedure, since the lack of knowledge of root canal system could lead to missing additional root canals which causes failure of endodontic treatment. The study of root canal anatomy was carried out by many researchers and among different population using various techniques. The aim of this case report is to provide an overview of the morphology of root canal in mandibular anterior teeth and its variation in Jharkhand population.

**Keywords:** morphology; root canal; mandibular central incisor; mandibular lateral incisor.

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#### **INTRODUCTION**

Knowledge of the anatomy of root canal systems is an essential prerequisite for endodontic treatment. Many of the problems encountered during and after root canal treatment occur because of inadequate understanding of the pulp space anatomy. Studies on the internal and external anatomy of teeth have shown that anatomic variations can occur in all groups of teeth and can be extremely complex.<sup>1</sup> This applies to mandibular incisor teeth as well, as many dentists fail to recognize the presence of a second canal. Current knowledge of pulp space anatomy is based on research findings and individual case reports. Many studies have examined the root canal systems of mandibular incisors. There is a lack of consistency in the reported prevalence of second canals in mandibular incisors. The differences may be related to study design (in vivo versus ex vivo), technique of canal identification (radiographic examination, sectioning and clearing) or to racial divergence. It is important to be familiar with variations in tooth anatomy and characteristic features in various racial groups, since such knowledge can aid location and negotiation of canals, as well as their subsequent

management. Additionally, a number of studies have shown different trends in shape and number of roots and canals amongst the different races. These variations appear to be genetically determined and are important in tracing the racial origins of populations.<sup>1</sup> Descriptions of the frequently occurring root canal systems of permanent teeth are based largely on studies conducted in Europe and North America, and relate to teeth of mainly Caucasian origin. These descriptions may not be fully applicable to teeth of non-Caucasian origin. There are no published reports on the root canal anatomy of mandibular incisors in North East Indian population. However, some studies have examined an Indian population. The North-Eastern population in India is mostly comprised of Indo-Aryans (Caucasoid) Mongoloids (Tibeto-Burman and Paleo-mongoloid sub race) and Dravidian sub populations. The population of North-East India is nearly 38 million, out of which tribal mongoloid population accounts for almost 42-45% of the total population.

### CASE REPORT

A 48-year-old male patient was referred to the Department of Conservative Dentistry in Hazaribagh college of dental sciences and hospital and Endodontics. The chief complaint was pain in lower front tooth. The patient gave a history of mild, intermittent, nocturnal, aggravates on mastication and relieves at rest for past one week.

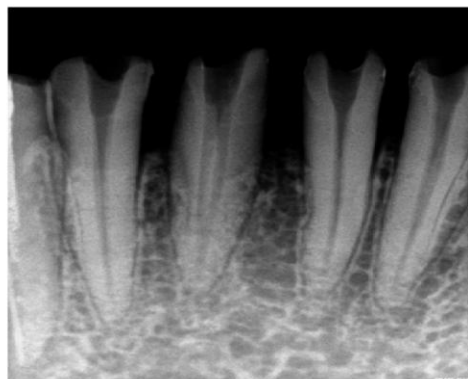
A diagnosis of dental caries with acute reversible pulpitis with symptomatic apical periodontitis in relation to 31,32,41,42 was made. Nonsurgical root canal therapy (NSRCT) was planned for 31,32,41 and 42. Local anaesthesia was administered. Complete

carious removal was done. The access cavity preparation was done with endo access bur. Coronal flaring was done with gates Glidden drill no 2. Patency of the canals were accessed with #10 K file. Working length was determined with respect 31,32,41 and 42. [figure 2]. Conventional hand instruments were used to perform biomechanical preparation. 2.5% of Sodium hypochlorite and 17%EDTA were used for irrigation. The canals were irrigated with normal saline after each instrument change. After completion of cleaning and shaping, master cone selection was done.

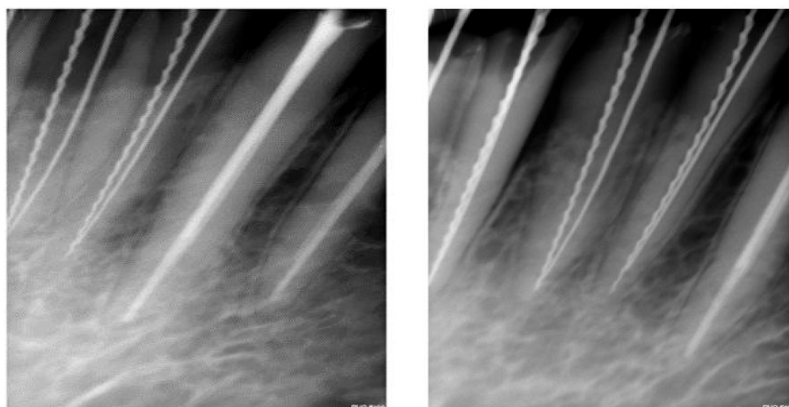
**FIGURE 1: CLINICAL PICTURE AFTER ACCESS OPENING**

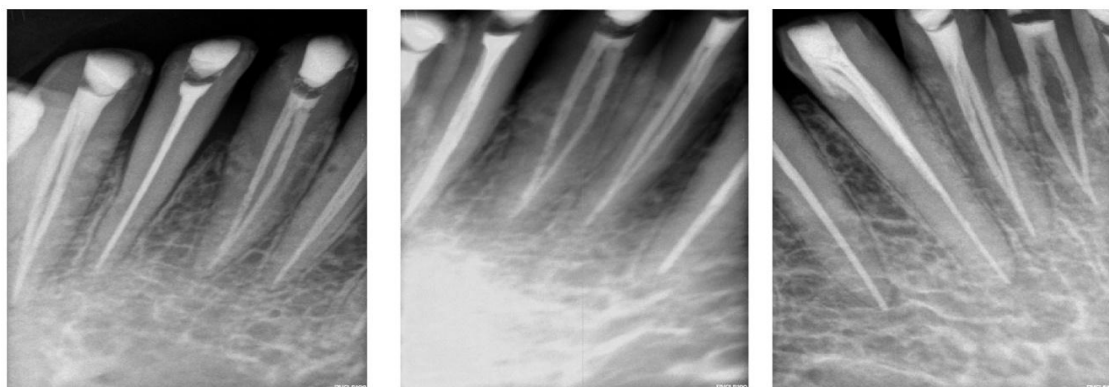


**FIGURE 2: RADIOGRAPH AFTER ACCESS**



**FIGURE 3: WORKING LENGTH DETERMINATION**



**FIGURE 4: OBTURATION WITH ACCESS RESTORATION**

This was followed by obturation with cold lateral compaction technique. After obturation radiograph was taken. Access cavity was restored with composite.

### DISCUSSION

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. 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 conserve sound tooth structure<sup>2</sup>.

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. To avoid missing this canal, the clinician should extend the access preparation well into cingulum gingivally, which, if present, is located directly beneath it<sup>2</sup>. 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. In this case, extension of the access opening lingually beneath the cingulum revealed the missed lingual canals in all mandibular incisors.

In this case, the private practitioner whom patient visited earlier was not well aware about root canal morphology of lower anterior or he/she must have been unable to detect the presence of second root canal, which is the main reason why the pain was possibly in lower anterior, even after the patient

visited that dentist so many times. One of the main reasons for endodontic treatment failure in mandibular incisor teeth is the failure to locate, debride, and obturate the missed lingual canal. Immediate relief of pain after location and debridement of second canal confirmed the reason of pain to be the missed lingual canals.

Thus, careful interpretation of the radiographic feature taken from different angles should be done before starting endodontic treatment. One must be careful while access opening, and initial buccolingual widening of mandibular incisors and gingival extension beneath the cingulum must be made to search for a possible second canal lingually.<sup>2</sup>

### CONCLUSION

These case reports highlight the importance of having a thorough knowledge of all possible root canal irregularities. In some cases, it is very difficult to identify additional root canals by radiographic examination and therefore visualisation and deep probing during initial endodontic treatment is essential for the location of all canals. With advances in modern endodontic techniques, most teeth with complex root canal anatomies can be successfully treated without surgical intervention.

**CONFLICTS OF INTEREST – THERE IS NO CONFLICT OF INTEREST.**

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