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## Root canal treatment of mandibular third molar with curved roots using hyflex EDM: A case report

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### Abstract

This case demonstrate root canal therapy of 2-canal mandibular third molar. Acute exacerbation was noted on previous intervention. Two canals (mesial and distal) were identified. Clinician need to be aware of the variations in the root canal anatomy of third molar. During clinical examination, the dental practitioner should identify the extension of decay and possibility for restoration, mouth opening and accessibility and future involvement as a functional component in a proposed treatment plan. For instance, third molars having dilacerated roots might be a risk factor for stress concentrations and displacements if selected as an abutment in a fixed prosthesis.

**Keywords:** Endodontic treatment, third molar, curved roots

### Introduction

Despite the educational efforts and oral hygiene programs organized by many dental associations to improve the oral and dental health, third molar teeth always are prone to dental decay due to their most posterior location and wrinkled occlusal anatomy that would favor plaque accumulation and obscure the proper access to the tooth surface for optimum cleaning. Apart from that, they usually appear in the oral cavity with abnormal eruption patterns, which also make them more susceptible to dental decay, as well as gingival and periodontal diseases. Owing to these detrimental complications, extraction of third molar teeth usually is considered as a common dental procedure.

Minimum intervention and retaining every functional component of the dental arch, including third molars, are the principle goals of contemporary dental practice. In some clinical situations, the retention of a third molar would be essential if the tooth is functional and/or would serve as a convenient abutment for future fixed or removable prosthetic restoration. As such, third molar teeth scheduled for endodontic therapy should be treated thoroughly to ensure the complete elimination of the inflamed dental pulp and microbial irritants from the root canal system that, if left, would impair the clinical outcomes of the proposed treatment plan.

Before commencing endodontic treatment in third molar teeth, a meticulous understanding of their root and root canal anatomical variations and their endodontic implications is of prime importance. In this article, the external and internal radicular anatomical variations reported in previous laboratory and clinical investigations are discussed. In addition, the treatment strategies and recommended guidelines that should be followed during endodontic treatment of third molars are described<sup>[1, 2]</sup>.

### Case Report

A 28-years old male patient presented with the history of pain in mandibular left posterior tooth region. Pre-operative radiograph demonstrated faulty restoration (Fig 1). Access opening was done under local anaesthesia. On access, two canals were identified. Copious irrigation with sodium hypochlorite and saline was done and canals were cleaned with 5.25% sodium hypochlorite and saline. A combination of electronic apex locator (Dentsply) and periapical radiographs were used to estimate working lengths (Fig 2). The Master apical file size was an Hyflex #25 taper .06.

Copious irrigation with 5% sodium hypochlorite was performed during shaping and cleaning procedure. Patient was medicated with antibiotics, analgesics and muscle relaxants. On subsequent appointment, the canals again, Bio Mechanical Preparation (BMP) was done using Glyde (Dentsply) as a chelating agent and irrigation was alternated using Sodium Hypochlorite (NaOCl 3%) and normal saline. Chlorhexidine (Dentachlor 2%) was used as a final rinse. Canals were dried with paper points, coated with Sealapex (Kerr Manufacturing Co.) and obturated using single cone technique. After endodontic retreatment, the tooth was restored with composite resin (Filtek Z250; 3M ESPE, St Paul, MN), which was clinically adequate (Fig 4).



**Fig 1:** Pre-operative radiograph



**Fig 2:** Working Length Determination



**Fig 3:** Master cone evaluation



**Fig 4:** Obturation

## Discussion

The morphological features and position of mandibular third molars always are unpredictable, and vary among different individuals. Mandibular third molars may have one to four roots, and similar to maxillary third molars, the number of encased root canals has been reported between one and six. However, the single and double-rooted variants encasing two or three root canals are considered the most common. Third molar teeth are subject to many dental complications because of their most posterior location, aberrant occlusal anatomy and abnormal eruption patterns. Owing to these anatomical limitations, their extraction remains the treatment of choice for many dental practitioners. Despite being a common dental procedure, minimum intervention and retaining every functional component of the dental arch are of prime importance in contemporary dental practice.

Besides their existence as a functional component in the dental arch, third molars may serve as a convenient abutment for a prosthetic restoration, and potentially reliable candidates for auto-transplantation. Therefore, whenever indicated, the retention of third molars should be preferred. However, due to anatomical challenges, an accurate perception and absolute clinical thoroughness are warranted to avoid the occurrence of serious complications while commencing endodontic treatment in third molar teeth<sup>[4]</sup>.

## Conclusion

Besides their existence as a functional component in the dental arch, third molars may serve as a convenient abutment for a prosthetic restoration, and potentially reliable candidates for autotransplantation. Therefore, whenever indicated, the retention of third molars should be preferred. However, due to anatomical challenges, an accurate perception and absolute clinical thoroughness are warranted to avoid the occurrence of serious complications while commencing endodontic treatment in third molar teeth. Following the basic principles and taking advantage of new innovations (usage of intermediate precurved sequential filing and flexible rotary systems) in the field of endodontics, even most severely curved canals can be negotiated and treated successfully as in the present case.

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