

Endodontic Treatment of a Mandibular First Molar Using Hyflex-EDM File : A Case Report

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Abstract

In order to achieve a successful endodontic treatment, the clinician must aim to establish a proper diagnosis and an appropriate treatment planning. A thorough idea about the root canal variation and canal configuration is of utmost necessity. Often incomplete or inadequate shaping and cleaning, leads to poorly obturated canals, thus allowing the moisture to the canal space

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Introduction

In order to achieve a successful endodontic treatment, the clinician must aim to establish a proper diagnosis and an appropriate treatment planning. A thorough idea about the root canal variation and canal configuration is of utmost necessity. Often incomplete or inadequate shaping and cleaning, leads to poorly obturated canals, thus allowing the moisture to the canal space.¹

The most important thing in achieving proper root canal treatment is by eliminating the micro-organisms present in the root canal space and the necrotic pulp tissue.² sealing the coronal areas is also important which prevents from further re-contamination of the root canal space and the peri-radicular space, thus achieving a long term success.³

The tooth with vital pulp has a higher success rate of root canal treatment than that of the necrotic tooth with peri-apical abscess. The reason behind this is the presence of necrotic tissue, micro-organisms and their by-products. These necrotic debris are difficult to completely eradicate from the tooth having variable morphology and configuration. A proper shaping can prevent the canals from the procedural errors.⁴

Case Report

A 25 year old female patient came to the department with a chief complaint of pain in lower right back tooth region since 2 months. On clinical examination dental caries was detected. A pre-operative radiograph was then taken which showed the caries approaching to pulp (Figure 1). The diagnosis was chronic irreversible pulpitis. The treatment plan was root canal treatment with hyflexedm rotary file. At first the patient was administered with local anesthesia. Access opening was the done with endo access bur. Working length was

determined with 15 K-file with apex locator and final confirmation was done with radiograph (Figure 2). The canals were the prepared upto 25k file along with copious irrigation after each file. Shaping and cleaning was then performed with the hyflexedm rotary file. Master cone was placed and radiograph was taken (Figure 3). Obturation was then done with guttapercha cones (Figure 4).

Discussion

Knowledge of root canal anatomy is of great importance. The variability and the configuration is important to diagnose for a better shaping and cleaning of the root canals in order to achieve a successful endodontic therapy.⁵ HyFlex EDM provides a better ease of shaping and cleaning of the canals and helps in achieving a successful root canal quickly and easily. HyFlex EDM files are produced using an innovative manufacturing process called Electrical Discharge Machining. The EDM process results in a file that is extremely flexible and fracture resistant. In fact, HyFlex EDM files are up to 700% more resistant to cyclic fatigue compared to traditional NiTi files. HyFlex EDM files follow the anatomy of the canal, which can significantly reduce the risk of ledging, transportation and perforation. The combination of flexibility, fracture resistance and cutting efficiency of the HyFlex EDM make it possible to reduce the number of files required for cleaning while preserving anatomy. Provided as a modular system of sterile instruments, HyFlex EDM includes Shaping, Glidepath, OneFile, Orifice Opener and Finishing files and may be used in combination with HyFlex CM files. All HyFlex EDM Files can be used at 500 rpm and at a torque of up to 2.5 Ncm (25 mNm) except the Glidepath files, which can be used with 300 rpm and at a torque of up to 1.8 Ncm (18 mNm). The built-in shape memory of HyFlex

EDM files prevents stress during canal preparation by changing their spiral shape. A normal autoclaving process** is enough to return the files to their original shape and fatigue resistance. Should the file fail to regain its shape after heat treatment, risk of fracture is increased, and the file should not be used after visual inspection. The HyFlex EDM owes its unique properties to a breakthrough technology called "Electrical Discharge Machining". This innovative manufacturing process uses spark erosion to harden the surface of the NiTi file, resulting in superior fracture resistance and improved cutting efficiency. Just like HyFlex CM files, HyFlex EDM files offer trusted controlled memory effect and regenerative properties.

Conclusion

The present case report describes the endodontic management of a mandibular first molar with three canals, one in the distal and two in the mesial. It is mandatory that the clinician should possess a thorough knowledge of not only the normal anatomy of the root canal system, but also aberrations. Thus, multiple angulated radiograph and close clinical inspection of the chamber floor at higher magnification is essential whilst treating teeth that have a high incidence of extra canals.

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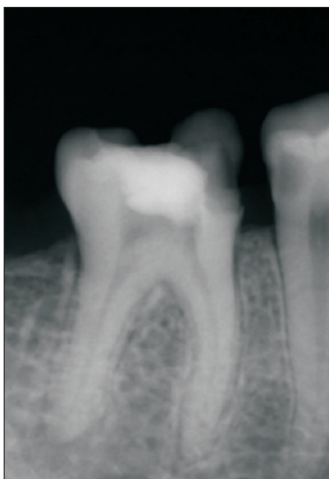


Figure 1: pre-operative radiograph

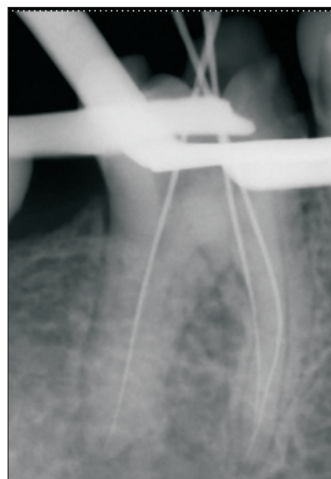


Figure 2: working length determination



Figure 3: master cone

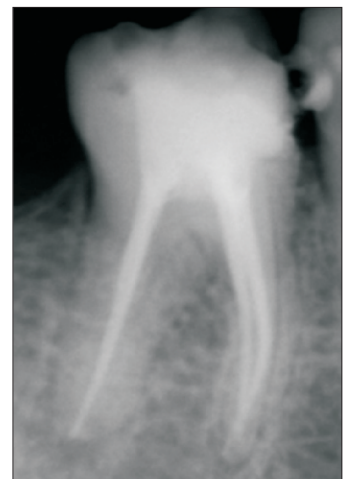


Figure 4: obturation