

## CASE REPORT

### Retrieval of A Separated Endodontic Instrument Via Braiding Technique

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#### ABSTRACT

A successful endodontic treatment of a tooth can be compromised by several causes, one such cause is a separation of an instrument within the canal. In order to increase the survival rate and prognosis of a tooth this mishap needs to be rectified. There are many nonsurgical and surgical ways available to deal with such a scenario. This case report presents a least invasive way of tackling this iatrogenic error that involves removal of the fractured instrument via braiding technique and also by passing of a ledge resulting in a successful outcome.

**Key Words:** *Braiding Technique Separated Instrument, Root Canal Treatment.*

#### Introduction

Dental clinicians performing endodontic treatment face variety of complications during this procedure, the most common of these are the iatrogenic errors occurring during root canal preparation.<sup>1</sup> Among these mishaps intracanal separation of an endodontic instrument is the most prevalent. This broken instrument might adversely affect the prognosis of the treatment by obstructing a thorough cleaning and shaping of the canal.<sup>2</sup> The long term prognosis of such teeth is determined by the pre-operative infection of the tooth, location and timing of the separated instrument.<sup>3</sup> In order to retain teeth with such mishap and to increase the longevity; several treatment options are available to overcome this incident. Among these options the first and the foremost is to try removing the separated fragment with the aid of ultrasonic, retrieval kits, hollow tubes or files. If these options fail the other options are to bypass the fragment or go for surgical treatments such as apicectomy, root resection, hemi section or extraction.<sup>4</sup> The choice for instrument retrieval technique should be the least invasive and is also operator dependent.<sup>5</sup> This article presents a case report on minimally invasive way of file retrieval from a lower first molar. The technique used for retrieval was “braiding

technique”. In which 2 or 3 small sized files are twisted around the separated instrument after an initial attempt of by passing it. This preserves root dentin thus provides strength and functional support to the already weakened tooth.

#### Case Report

A 22years old male patient presented to operative department of Islamic International Dental hospital with a complaint of radiating pain on chewing in lower right first molar. Upon clinical examination the tooth was heavily restored with amalgam, mild swelling in buccal vestibule was evident. (Fig.1) The tooth had undergone root canal treatment 1year back. The tooth was tender to percussion. Oral hygiene status was satisfactory. Medical history was non-significant.

Periapical radiograph was performed that showed an inadequate endodontically treated tooth. Distal canal was obturated at short length. A separated H-file was seen in one mesial canal at least 4-5mm in the coronal 2/3<sup>rd</sup> of root with the other mesial canal being missed. For identifying the canal with the separated instrument another X-ray with SLOB (Same Lingual Opposite Buccal) technique was done. The mesial shifting located the instrument to be in mesiobuccal canal, which was later confirmed after access opening.

#### Clinical procedure

The patient was notified about the condition of the tooth, and also the treatment to be done. The proposed treatment was initiated after taking the informed consent from the patient. Local anesthesia was given via inferior alveolar nerve block and rubber dam was applied. The amalgam restoration was removed with high speed hand piece using tungsten carbide 245 bur till the access opening.

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**Fig 1: Pre Operative Periapical Radiographic Image**

Coronal flaring was done with GG-drills 2 and 3 followed by 4. An attempt was made to bypass the separated instrument using H-files in a sequence from 20 to 40 numbers. The created space was used to employ “Braiding technique” in order to retrieve the file. Two number 10k files were inserted in the canal and twisted around the separated file and then pulled upwards towards the orifice. This led to the loosening of file in canal which was later removed with the aid of “Stieglitz forceps.” (Fig 2 & Fig3) During canal shaping and cleaning a ledge was encountered in outer wall of mesio-lingual canal. The ledge was bypassed with a small K- file with a watch-



**Fig 2: Periapical Radiograph Showing the Removal of Separated Instrument From the Canal**



**Fig 3: Retrieved Instrument from Canal**

winding motion and the working length was achieved. (Fig.4) The root canal treatment was completed with laterally condensed obturation. (Fig.5) Coronal buildup was done with amalgam filling.



**Fig 4: Ledge bypassed**



**Fig 5: Post-Operative Periapical Radiograph of Obturated Root Canals**

**Discussion**

The success and an overall prognosis of root canal treatment might be adversely affected by a separated instrument within a canal.<sup>6</sup> Instrument separation is a common mishap that can occur even by experienced endodontists as shown by a previous study results that incidence was (94.8%) in endodontists as compared to general dentists (85.1%).<sup>7</sup> The prognosis in such cases is dependent on root vitality, periapical status of a tooth, the level of separation and the status of cleaning and shaping of canal at the time of separation.<sup>8</sup> In order to increase the longevity of a tooth, every attempt must be made to bypass or remove the fractured instrument.

Orthograde instrument retrieval is a time taking procedure and requires a lot of effort with a 55-79%

success rate.<sup>8</sup> Among different retrieval methods braiding technique is the simplest one, limiting excessive removal of root canal dentin and also prevents tooth from iatrogenic errors such as perforation and fracture.<sup>9</sup>

In this case copious irrigation with sodium hypochlorite and 15% EDTA were used for lubrication. Researches have shown that if an instrument can be bypassed it can be retrieved with ease.<sup>10</sup> Same as in this case after accomplishing the bypassing, braiding method was implemented. That involves insertion of 2 or 3 H- files in the canal alongside the fractured object which is then withdrawn by gripping the object through twisting of these files. The above mentioned technique resulted in a successful retrieval of the instrument with least amount of destruction to the tooth and periapical tissues.

The advancement of technology had revolutionized the field of dentistry in every aspect, resulting in the development of newer techniques for retrieval of fractured instrument. The different techniques and armamentarium includes Masserann kit, Brasseler Endo extractor kit, Cancellier instrument and Mounce extractors, Instrument removal system, Ultrasonic removal with dental operating microscope/ dental loupes, laser, electrolysis and many more.<sup>11,12</sup> In comparison to the novel techniques mentioned above, the retrieval of a fractured instrument with the aid of braiding technique is a simple and low cost alternative. It does not require any special devices, and uses routine endodontic instruments in the dental clinic, it is fast to execute and less technique sensitive.<sup>13</sup> In order to achieve the beneficial result a dentist needs to charter patience, persistence and perseverance along with the least invasive method of instrument retrieval.<sup>14</sup>

### Conclusion

As stated prevention is better than cure so every effort must be made to follow the proven strategies, implementing safe methods and have thorough knowledge during root canal procedure in order to

prevent such mishaps from happening at first place. On the other hand if it does happen begin treatment with the simplest and least invasive methods to deal with such scenarios.

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