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Retrieval of Separated Instrument Imbroglio in Endodontic procedure: A Case Report

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Abstract

The separation of an endodontic instrument within the root canal system can be one of the most stressful and unpleasant situations with which the clinician can be confronted. These fractures often occur due to incorrect use of instruments According to the literature, there is no standardized method to follow when attempting to remove fractured instruments. The presented cases illustrate one of effective techniques to remove fractured endodontic instruments from the root canal system.

Keywords: Mesiobuccal Canal, Retrieval, Separated Instrument, Wire Loop.

Introduction

File separation inside the root canal has become a common error in endodontics. The separated instrument, particularly a broken file, leads to the root canal obstruction and prevents thorough cleaning and shaping procedures. There can be continuous pain or discomfort in the involved tooth, if the broken instrument is not removed or bypassed[1] .There are various reasons for instrument separation inside the canal, such as over-instrumentation, improper filing techniques, increased speed with rotary instrument, loss of tactile sensation, anatomical variations like curved canals, and accessory canals[2] .When instrument separation occurs, the clinician has the choice of (1) leaving the instrument in the canal,

(2) bypassing and obturating the canal, or (3) retrieving the file segment either surgically or non-surgically.

The success of file retrieval depends on the canal anatomy, metallurgy of the broken file segment, location of the fragment inside the canal, the plane in which the canal curves, the length of the separated fragment, and the diameter of the canal itself[3]. There are various nonsurgical methods to retrieve a broken file segment, like the use of ultrasonic tips (ProUltra tips, Dentsply), Masserann Kit, Gates Gliden drills for coronal enlargement, etc[4].

In this case report, one of the useful method i.e WIRE LOOP method is discussed which can be used to separate the file from the canal.

Case Report

A 54-year-old female patient with an uncomplicated medical history has been reported to Postgraduate department of Conservative dentistry and Endodontics at Daswani Dental College and Hospital, Kota, Rajasthan with a referral letter from a Department of Prosthodontics requesting intentional RCT with respected tooth no. 16. On clinical examination, tooth was asymptomatic. Radiographic findings shows narrow and curved canal. Treatment plan was suggested as Intentional RCT with respect to the tooth no 16.

Access opening was done under local anesthesia. All the three canals were located and pulp extirpation was done by using K file. She was prepared for biomechanical preparation and working length estimation was made in approximate basis using apex locator (Eightieth Changzhou Sifary China) as well as with RVG. During the biomechanical preparation, accidentally rotary file no: 20.4%(Neoendo Flex) has separated in the mesio-buccal canal. Patient was informed about the accident and was sent with a closed dressing of Cavit and recalled for further treatment.

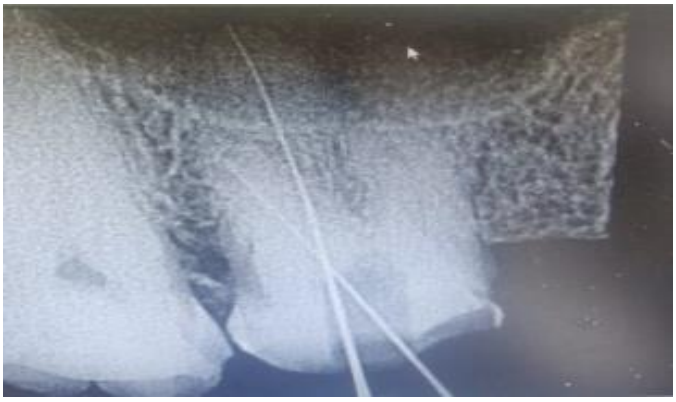

Figure 1: Working length determination using 10 no. K file

Figure 2: Radiograph showing separated file in M-B canal of 16 and separated file located at the orifice of miso buccal canal

Second appointment

Patient was recalled after three days and file retrieval was done successfully and sent back with a closed dressing for the next appointment. Complete obturation of all the three canals has been achieved successfully retrieved separated instrument followed by Obturation and post-endo restoration.

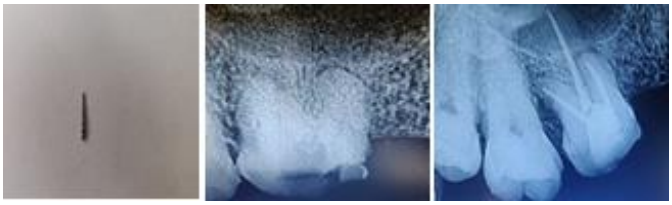

Figure 3

Method of file retrieval

To achieve coronal access, high speed friction grip burs were used to enlarge the access opening and created a straight line access to all canal orifices. Then modified Gates-Glidden drill no.1 was used circumferentially to

create a telescopic preparation or tapering preparation from the canal orifice to the coronal end of the broken file.

Broken file was retrieved by using Wire loop method. Wire loop can be formed by passing the 2 free ends of a ligature wire (Dentomech Ligature Wire) through a 25-guage injection needle from the open end until they slide out of the hub end. The 2 free ends were passed from needle hub to the barrel of the syringe and attached to the plunger of the syringe by flowable composite (Dentgist Nano Com Flow).

Then the needle was inserted in to canal and the free end of separated file was engaged into the wire loop and whole assembly has been withdrawn from the root canal. This technique creates a negative pressure inside the barrel of the syringe and made the file tip pulled back upward. The whole procedure were carried out under Magnifying loupes () for better visibility and clear vision.

Figure 4 : Image showing equipment's required to make wire loop device i.e scissor, flowable composite, ligature wire, 25 gauge needles

Discussion

Forcing an instrument into the canal or along a sharp curve, improper use, or overuse of an endodontic instrument leads to fracture of an endodontic instrument. The prognosis of the root canal treatment after the instrument separation depends on the stage of biomechanical preparation and debridement achieved at the time of instrument fracture[5].

Several methods have been described for removal of separated instruments from the root canal such as Masserann kit, Endo Extractor, wire loop technique, and ultrasonics. However, successful removal of fractured instrument relies on factors such as length, type, and position of instrument in relation to canal curvature[5].The safe removal of a separated instrument is influenced by the anatomy, canal curvature and limited by the root morphology and depth of external concavities. An instrument can be easily retrieved if it lies in the straightaway portion of the canal and if one-third of its overall length is exposed[6,7].The success rate of removing stainless steel instruments is 55%–70%[5].

Although different retrieval techniques have evolved sometimes because of limited visibility or restricted space, removal of the instrument becomes difficult. Moreover, excessive canal enlargement during instrument retrieval can also lead to weakening and consequent fracture of the tooth or formation of iatrogenic ledges and root perforations[8]. When separated instrument does not seem possible to be removed then the decision to bypass the instrument with smaller size file should be considered.

Advancement in technologies and magnification aids has made instrument retrieval possible in majority of cases. Wire loop technique can be used to retrieve objects that are not tightly bound in the root canal. A wire loop can be formed by passing the 2 free ends of a 0.14-mm wire through a 25-guage injection needle from the open end until they slide out of the hub end. By using a small mosquito haemostat, the wire loop can be tightened around the upper free part root canal[10].When retrieval is not possible, then instrument can be bypassed and retained separated instrument can be incorporated into the obturation[6]. Separation of the file can be prevented by adhering to proven concepts of biomechanical preparation and discarding endodontic instruments after

each case. Prevention is the best strategy for a fractured instrument in the root canal.

In the above case reports, the separated instruments have been retrieved successfully with wire loop technique which is a safe and conservative method. Use of magnification also contributed to the success of the procedure. The separated fragments were retrieved in short duration of time with minimal dentine removal. Wire loop offers a predictable method of retrieving separated instruments from the root canal mostly if the file got separated in upper one third.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

References

1. UnNisar SM, Kumar A, Iftekhar H, Alam S. Retrieval of a separated nickel titanium instrument using a modified 18 guage needle and cyanoacrylate glue: a case report. Restor Dent Endod 2013 May;38(2):93-97. 2.
2. Wadhawan R, Luthra K, Kaur Sidhu J, Solanki G. Are you ready to overpower the challenge of instrument separation in endodontics: a review. Br J Mater Sci Technol 2015;1(1):1-6.
3. Ruddle CJ. Broken instrument removal: the endodontic challenge. Dent Today 2002 Jul;21(7):70-72, 74, 76.
4. Shenoy A, Mandava P, Bolla N, Vemuri S. A novel technique for removal of broken instrument from root canal in mandibular second molar. Indian J Dent Res 2014 Jan-Feb;25(1): 107-110.
5. Chhina H, Hans MK, Chander S. Ultrasonics: A novel approach for retrieval of separated instruments. J Clin Diagn Res 2015; 9:ZD18-20.
6. Nevares G, Cunha RS, Zuolo ML, Bueno CE. Successratesfor removing or bypassing fractured instruments:Aprospective clinicalstudy.J Endod 2012;38:442-4.
7. Ruddle CJ. Broken instrument removal. The endodontic challenge. Dent Today 2002;21:70-2, 74, 76.
8. ShenoyA, Mandava P, Bolla N, Vemuri S.Anovel technique for removal of broken instrument from root canal in mandibularsecond molar. Indian J Dent Res 2014;25:107-10.
9. Madarati AA. Retrieval of multiple separated endodontic instruments using ultrasonic vibration. J Taibah Univ Med Sci 2016;11:268-73.
10. Roig-Greene JL. The retrieval of foreign objects from root canals: a simple aid. J Endod 1983;9:394–7.