European Journal of Molecular & Clinical Medicine

ISSN 2515-8260 Volume 07, Issue 11, 2020

SEPARATED INSTRUMENT RETRIEVAL (SAFE AND PREDICTABLE)

Dr. Susheel Kumar, Senior lecturer, Department of Pedodontics and Preventive Dentistry, Panineeya Dental College, Hyderabad

Dr. Kanumuri Pratej Kiran, Reader, Department of Pedodontics and Preventive Dentistry, Meghna Institute of Dental Sciences, Nizamabad

Dr Karuna Muthe, MDS, Department of Pediatric and Preventive Dentistry, Panineeya Dental College, Hyderabad

Dr. Ganga Achutha, Senior Lecturer, Department of Pedodontics and Preventive Dentistry, Meghana Institute of Dental Sciences, Nizamabad

Dr. Avinash Sinha, Senior lecturer, Department of Conservative Dentistry and Endodontics, Hazaribagh College of Dental Sciences, Hazaribagh

Dr. Musaib Syed, BDS, P.M.N.M. Dental College, Bagalkot, Karnataka

Corresponding address: Dr. Susheel Kumar, Senior lecturer, Department of Pedodontics and Preventive Dentistry, Panineeya Dental College, Hyderabad

Email Id: ramdaspallysusheel@gmail.com

Abstract: 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.

Keywords: File separation, Instrument separation. Instrument retrieval,

Description:

A comprehensive understanding of root canals and rootcanal anatomy is very crucial for achieving a successful endodontic therapy.most often it's a mishap that we find broken files which effect the shaping and filling process of root canals. Incidence of broken file systems 1.6% - 2.4% for rotary instruments and hand files.[1]

There are several methods and techniques to remove broken files from root canals, however there is no standardized technique for its retrieval, some of techniques involve

bypassing with a smaller file along the side of inner wall, one more technique is use of ultrasonic tips to pass on the ultrasonic energy to broken segment to retrieve, also use of micro tweezers and several systems like retrieval kits and use of modified lasso.

One should be expertise in Retrieval techniques to avoid associated complications like perforations of root walls, excess dentin removal, Apical pushing of the broken segment and Ledge formations

Moreover, the technique requires a lot of skill and an endodontic microscope for proper access, visibilityto locate the position of the broken segment with in the root canal.

Case report:

A 35-year-old female reported pain in upper right side, on clinical examination tooth was on positive tender on percussion in relation to right maxillary first molar.

Radiographic examination shows mesial proximal caries extending towards the mesial pulp horn and shows two broken file segmentsof length 4mm and 2mm respectivelyin the apical 3rd of mesiobuccal canal as shown in **figure 1**.

Based on clinical and radiographic findings, the diagnosis of right maxillary molar is symptomatic apical periodontitis. The tooth was modified to obtain coronal access with Start X tip no.2 (DENTSPLY). 5.25% Naocl was used an irrigant to remove the debris. Working length was determined using Propex Pixi apex locator (DENTSPLY). The canals were prepared using Neoendo S (ORIKAM) till the apical size 25.6%.

The mesiobuccal canal (mb2) was scouted and observed that it was in confluence with mesiobuccal canal (mb1). Once remaining canals were shaped and cleaned the bypass was attempted with D-finders of iso no 6(pink) and followed till iso size no15 (white) as shown in **figure 2**.

Then after successful bypass was attempted then we started staging platform using Hyflex EDM (COLTENE) iso no 60. Once the staging platform was obtained the retrieval process was started using Ultra X (ORIKAM) gold tip.

The tip was placed in a dry canal on the inner wall and started to activate for 10 seconds and the ultrasonic energy is passed on to the small broken segment the application of metal tip produces a jarring effect[3] on the segment resulting in wiggling in the canal. 17% EDTA solution (CERAKMED) and activated using Ultra X tip for 10 seconds continuously, which resulted in the successfully retrieval of small broken segment **(figure 3).**

Once the small fragment is retrieved, we again bypassed the canal to iso no 20 & 25. Same irrigation protocol followed as before. Now we tried to bypass the fragment with Neolix Neoniti EDM A1 file under low speed (120 rpm), then again we started to bypass with Neoniti A2 file till it reaches the apex.

ISSN 2515-8260 Volume 07, Issue 11, 2020

After successful bypass was achieved, we started to introduce the Ultra X again into canal space along with 17% EDTA and vibrated till 10sec and the second broken file fragment got pop out (**figure 4,5**), then we again followed the irrigation with 40% citric acid and shaped the canals for obturation.

Fig no 1: Pre-operative Radiograph

Fig no 2: Separated file bypassed

Fig no 3: Retrieval of small broken segment

Fig no 4: Retrieval of large broken segment

Fig no 5: Post Retrieval Radiograph

LIMITATIONS

This technique is not always predictable in all cases, clinician should understand the complexity of root canal anatomy and experience dictate to remove only the Coronal 1/3rd dentin around the file and to stop the pushing the ultrasonic tip too far into dentin. This technique is useful in mild curvature cases(less than 20 degrees) only, not all cases will end in retrieval.

Conclusion

Management of a broken instrument inside the root canal is very difficult and time consuming and requires creativity as well as clinical knowledge and skills. From present case report it can be concluded that ultrasonic (Ultra X) can be used for broken file retrieval which is simple, cost-effective, and less harmful to the tooth.

REFERNCES

1. Steven J Cohen and K Hargreaves, Pathways of Pulp, Elsevier, USA, 11th Edition 2016.
2. T. Lambrianidis, Management of fractured endodontic instruments, Springer, Cham, Switzerland 2018.
3. Steven J Cohen, Gary D. Glassman and Richard Mounce, Article category: 594; Oral Health May Edition 2005.