IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 14, Issue 12 Ver. X (Dec. 2015), PP 55-58
www.iosrjournals.org

Management of Intracanal Separated Instrument Using Masseran Technique: A Case Report

Dr Aditi Sahni[1], DrManojG.Chandak[2]
[1] *Post Graduate Student, Conservative Dentistry and Endodontics, Sharad Pawar Dental College, Sawangi, Wardha, Maharashtra*
[2] *Professor and Head of Department, Conservative Dentistry and Endodontics, Sharad Pawar Dental College, Sawangi, Wardha, Maharashtra*

Abstract: The separated instrument particularly a broken file leads to metallic obstruction, in the root canal and blocks thorough cleaning and shaping procedure. When attempts of bypassing such a fragment go in vain, it should be retrieved by mechanical devices. Masserann Kit is one such device for orthograde removal of intracanal metallic obstructions. This clinical case demonstrates usage of Masserann technique in successful retrieval of a separated file which was tightly binding in the apical 3rd root canal dentin of mandibular left lateral incisor

I. Introduction

Intracanal separation of endodontic instruments may hinder cleaning and shaping procedures within the root canal system, with a potential impact on the outcome of treatment. The separated instrument particularly a broken file leads to metallic obstruction in the root canal and blocks thorough cleaning and shaping procedure. When attempts of bypassing such a fragment go in vain, it should be retrieved by mechanical devices.

Success of nonsurgical fractured instrument removal from root canals depends on the canal anatomy, the location of the fragment in the canal, the length of the separated fragment, the diameter and curvature of the canal itself, and the impaction of the instrument fragment into the canal wall. (1)

The separation of instruments during endodontic therapy is a troublesome incident and ranges from 2-6% of the cases investigated. The separated fragment blocks the access to thorough root canal cleaning and shaping procedure apical to the level of separation or irritates the periapex when it jets out of the root apex. (2)

Hence an attempt to bypass or retrieve the instrument should be made before leaving and obturating to the level of separation or embarking upon surgery. (2)

The most common causes for file separation are improper use, limitations in physical properties, inadequate access, root canal anatomy, and possibly manufacturing defects. (3)

Masserann technique is one among many methods of instrument retrieval. This technique is useful in retrieving broken files, silver points and posts from the root canal and in general a success rate of 55% has been reported. (3)

II. Case Report

A 55 year old male patient reported to the Department of Conservative Dentistry and Endodontics, Sharad Pawar Dental College, Sawangi, Wardha with pain in the lower front region of jaw.

Radiographic examination fragment of separated file in the apical 3rd of root canal. Hence the patient was referred for retreatment. Masserann technique was employed for its retrieval. (figure 1)

Figure 1. Separated instrument in apical third of root canal.

III. Clinical Technique

The armamentarium used consisted of long, crown cutting diamonds (Shofu Preparation Kit, Japan), Gates- Glidden drills (Mani Inc., Japan), slow speed, contra angle handpiece (NSK, Japan), and Masserann kit (Micro Mega, France) which contains an assortment of colour coded, end cutting trephan burs of increasing size

which are rotated anti clockwise to create space around the coronal end of the fragment by cutting surrounding root canal dentin and two sizes (1.2 and 1.5mm in outer diameter) extractors to be inserted into the created space.

The extractor is tube like with a plunger rod (stylet) which when screwed inside the extractor locks the exposed coronal end of the fragment against internal embossment just short of the end of the extractor. (Figure 2)

Figure 2. Masserann Kit consisting of assortment of trephans and extractors with plunger

First visit:

In mandibular lateral incisor, the length of the instrument was determined and its access opening was refined to obtain a straight line access. (Figure 3). The separated instrument was then visualized under the Dental Operating Microscope. (figure 4)

Figure 3. Determination of Working Length

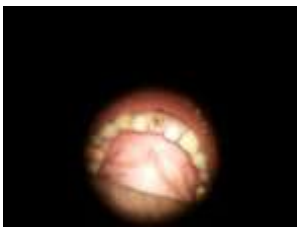

Figure 4. Separated instrument under DOM

The pre-selected trephan with a diameter of 1.2mm was latched into contra angle hand piece and run in an anticlockwise direction to create a trough around the coronal end of the fragment by ditching the dentin. The centering of the trephan over the fragment was ensured radiographically. (figure 5)

Figure 5. Trephan centered over the fragment

The extractor tube with a diameter of 1.2mm was slid into the trough to sleeve the fragment and a radiograph was taken. The plunger rod was turned inside the extractor tube in a clockwise direction to grip the fragment against its wall.

When the tight grip was felt by the tactile sense, the entire assembly was rotated in an anticlockwise direction to unscrew the fragment from the dentin and withdrawn to see the fragment retrieved (Figure 6). Canal free of the fragment was evident radiographically as well (Figure 7).

Figure 6. Retrieval of fragment

Figure 7. Fragment retrieved by the Extractor

Second Visit

Retreatment employing regular root canal cleaning and shaping followed by obturation using lateral condensation technique was carried out. (Figure 8)

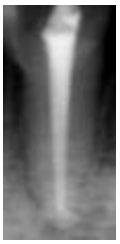

Figure 8. Post obturation Radiograph

IV. Discussion

Intracanal separation of instruments usually prevents access to the apex and impedes thorough cleaning and shaping of the root canal, and thus may compromise the outcome of endodontic treatment and reduce the chances of successful retreatment. (4)

In such cases, prognosis following an endodontic therapy depends on the condition of the root canal (vital or non vital) tooth (symptomatic or asymptomatic, with or without periapical pathology), amount of cleaning and shaping at the time of separation, the level of separation in the canal and is generally lower than the one with normal endodontic treatment. (5)

Hence every attempt should be made to bypass or retrieve the separated instrument. Masserann Kit has been used as a device for removing broken instruments and a success rate of 73% and 44% had been reported regarding its use in anterior and posterior teeth respectively. However it needs a well controlled use with ample convenience form and frequent radiographic monitoring. (6,7)

In this case, the separated file was tightly bound in the straight, apical 3rd of the mandibular lateral incisor. Since the attempts of by passing it failed, Masserann technique was employed. Obtaining of straight line access to the fragment facilitated centering of the trephan over the fragment. This ensured circumferential freeing of the coronal end of the fragment with safe cutting of the peripheral dentin around the fragment. This promoted tight gripping of the fragment and its retrieval along the long axis of the root, thus allowing regular retreatment.

V. Conclusion

The best antidote for a broken file is separation. In case of separation, safe retrieval or by passing should be carried out. Among the retrieval methods, Masserann technique is risky and time consuming, yet within its clinical limitations, a separated file was retrieved from mandibular lateral incisor.

References

[1.] Comparison of the Different Techniques to Remove Fractured Endodontic Instruments from Root Canal Systems.
[2.] Arcangelo CM, Varvara G, Fazio P.D. Broken instrument removal – two cases, J Endodon
[3.] 2000 ; 26 : 568 – 70
[4.] Roda RS, Gettleman BH. Nonsurgical retreatment. In: Cohen S, Burns RC, editors. Pathways of the pulp, 9th ed. St. Louis: CV Mosby; 2006. p. 982-90.
[5.] Hulsmann M. Methods for removing metal obstruction from the root canal. Endod Dent Traumatol 1993 ; 9: 223-37.
[6.] Okiji T. Modified usage of the Masserann Kit for removing intracanal broken instruments. J Endod 2003;29:466-7
[7.] Arcangelo CM, Varvara G, Fazio PD. Broken instrument removal two cases. J Endod 2000; 26:568-70.
[8.] Freidman S, Stabholz A, Tamse A. Endodontic retreatment: case selection and techniques part 3. Retreatment techniques. J. Endodon 1990 ; 16 : 543-9