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### Case Report

## RETRIEVAL OF A SEPARATED FILE USING MASSERANN TECHNIQUE: A CASE REPORT

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### ABSTRACT

The separated instrument inside the root canal system 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. Masserann Kit is one such device for orthograde removal of intra canal metallic obstructions. This clinical case demonstrates usage of Masserann technique in successful retrieval of a separated file which was tightly binding in the middle and apical 3<sup>rd</sup> root canal dentin of maxillary left central incisor.

**Keywords:** Separated Instrument, Masserann Kit, Orthograde Removal, Middle and Apical 3<sup>rd</sup> Root.

### INTRODUCTION

The separation of instruments during endodontic therapy is a troublesome incident and ranges from 2-6% of the cases investigated<sup>1</sup>. The separated fragment blocks the access to complete root canal cleaning and shaping procedure. This is significant in a tooth which is non vital and associated with periapical pathosis as it affects the final outcome of the endodontic treatment. 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. Separated instrument retrieval is often technique sensitive, difficult, time consuming and the success rate ranges from 55 – 79%<sup>1</sup>.

Masserann technique is one amongst 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<sup>2-3</sup>. This case report is about the successful retrieval of a separated file tightly wedged in the middle and apical 3<sup>rd</sup> root canal dentin of a maxillary left central incisor using Masserann technique.

### CASE REPORT

A 38 year old female was referred to the Department of Conservative Dentistry and Endodontics, SDS, KIMSUDU, Karad with an endodontic mishap, in the form of instrument

separation. Radiographic examination revealed, underobtured root canal filling in maxillary right central incisor and instrument separation with maxillary left central incisor, with a fragment of separated file in the middle and apical 3<sup>rd</sup> of the root canal (Fig 1), Hence the patient was referred for retreatment in both the teeth. Masserann technique was employed for retrieval of separated instrument from maxillary left central incisor, as the efforts of bypassing the fragment went futile.

The armamentarium used consisted of 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 trepan 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 1.5 mm in outer diameter) extractors to be inserted into the created space. The extractor is tube like with a plunger rod 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.

#### First visit:

The underobtured Gutta –percha filling of the root canals of maxillary right central incisor was removed. In maxillary left central incisor, the length of the working space to the coronal end of the fragment was determined. Radicular access to the

coronal end of the fragment was straightened by funnelling the root canal with sequential use of modified Gates –Glidden Drills number 1 and 2. The pre-selected trepan with a diameter of 1.2 mm 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 extractor tube with a diameter of 1.2 mm was slid into the trough to sleeve the fragment and the plunger rod was turned manually, inside the extractor tube in a clockwise direction to grip the fragment against its wall. It took many attempts of sleeving and gripping the fragment and in one such attempt, when the tightest 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 (Fig 5). Retrieved instrument was 8 mm in length (Fig 6). Canal free of the fragment was evident radiographically (Fig 2). Time taken to retrieve the fragment was approximately 40 minutes.

#### Second and third visits:

Retreatment was completed employing regular root canal cleaning and shaping and placement of intracanal medicament ( $\text{CaOH}_2$ ) in second visit followed by obturation using lateral condensation technique in third visit with both teeth (Fig 2, 3 and 4).



Figure 1



Figure 2



Figure 3



Figure 4

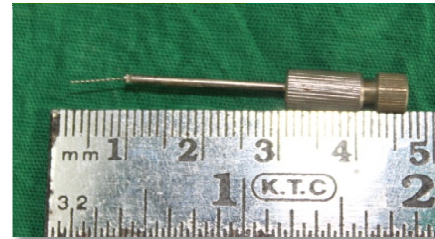


Figure 5

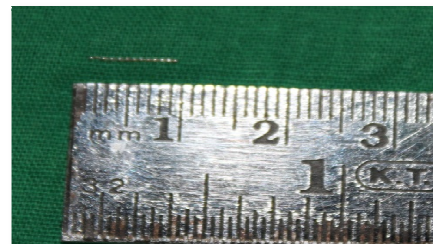


Figure 6

## DISCUSSION

Separation of instruments usually prevents access to the apex, impedes complete cleaning and shaping of the root canal, thus it may compromise the prognosis of endodontic treatment and reduce the chances of successful retreatment<sup>1-2,4</sup>. In such cases, prognosis following an endodontic therapy depends on the condition of the root canal (vital or non vital), condition of the tooth (symptomatic or asymptomatic, with or without periapical pathology), amount of cleaning and shaping completed at the time of separation, the level of separation inside the canal and is generally lower than the one with normal endodontic treatment<sup>1,5</sup>. Hence every attempt should be made to bypass or retrieve the separated instrument.

The orthograde retrieval depends on cross sectional diameter, length, curvature, dentin thickness and morphology of the root, composition, cutting action (clockwise or counter clockwise) of the instrument, length, location and amount of binding or impaction of the fragment in the canal<sup>2,6</sup>. Masserann Kit has been used for over 40 years as a device for removing separated 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<sup>3-4</sup>.

It has limited application in posterior teeth with thin roots, curved roots, as the use of relatively large and rigid trephans leads to removal of excess amount of root dentin and

weakening of the teeth or risk of perforation. It is often time consuming and requires 20 minutes to several hours and is consisted to be inferior to ultrasonics.<sup>3,7</sup> However, Masserann Kit is useful in removing metal obstructions from anterior teeth having thick, straight roots. Moreover, the locking mechanism of the extractor provides considerable retention in gripping and dislodging an obstruction, which is tightly wedged in the canal.

In this case, the separated file was tightly bound in the straight, middle and apical 3<sup>rd</sup> of the maxillary left central incisor. Since the attempts of bypassing it failed, Masserann technique was employed. Obtaining of straight line access to the fragment facilitated centering of the trepan 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.

### CONCLUSION

Prevention of the instrument separation is the best strategy to avoid any stress, anxiety and uncertainty regarding prognosis associated with it. In case of separation, safe retrieval or by passing should be carried out. Among the retrieval methods, use of Masserann kit is technique sensitive, may lead to excess removal of dentin and it is time consuming, yet by tactful applicability, within its clinical limitations, separated files can be retrieved using Masserann kit.

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