



## USE OF HYPODERMIC NEEDLE FOR FRACTURED LENTULOSPIRAL RETRIEVAL

## Dental Science

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## ABSTRACT

Cleaning and shaping the canal especially the apical third gives us a good result in root canal treatment. Any impediments in the canal like ledge formation or separated instrument hinders this procedure. Separated instrument as such will not have deleterious effect on the success but it all depends on the stage of root canal treatment at which the instrument gets separated. Many instrument retrieval kits and techniques have been mentioned in the literature. Some of these procedures might require unnecessary removal of root dentin which weakens the root structure. Here we present a case report where a separated lentulospiral was retrieved from disto-buccal canal of maxillary left second molar using a novel and indigenous method, a prototype of tube and glue method using chair side apparatus.

## KEYWORDS

Lentulo Spiral, Separated Instrument, Instrument Retrieval, Hypodermic Needle, Cyanoacrylate.

## Introduction

During the endodontic treatment when an instrument gets separated due to excessive or improper use it often leads to considerable anxiety both to the dentist and the patient. Though various techniques and devices for retrieving the fragment have been described in the literature no standardized procedure exists.<sup>1,2</sup> Using some of the techniques suggested in the literature for retrieval of separated instrument involves removing a great amount of sound dentin which will thin the root canal wall and eventually weaken the root.<sup>3</sup> The following case report describes a clinical scenario where an separated lentulospiral, is retrieved from the disto-buccal canal of maxillary left second molar using a very conservative approach.

## Case report

A-62-year old male patient was referred to the Department of Conservative Dentistry and Endodontics regarding endodontic management of the maxillary left second molar, as a result of chronic irreversible pulpitis with apical periodontitis. On presentation, the tooth exhibited dislodged restoration, secondary carious lesion involving the pulp with mild discomfort on percussion. Radiographic examination revealed widened periodontal ligament space in relation to palatal root.



**Figure 1: Preoperative radiograph of maxillary left second molar**

Confirming the diagnosis after pulp vitality tests root canal treatment was initiated. Three canals (Mesio-buccal, Disto-buccal and Palatal) were negotiated with 10# and 15# k-file (Mani) to their apices and working length determined. A NiTi (ProTaper) file system was used to prepare all the three canals. Calcium hydroxide powder mixed with saline was being placed in the canals using a rotary lentulospiral (#25) (Mani), incidentally a lentulospiral (#25) got separated in the disto-buccal canal below the level of root canal orifice.



**Figure 2: Radiograph showing separated lentulospiral in DB root**

Keeping in mind the periapical pathosis and its impact on prognosis, the retrieval of separated instrument was planned. Preliminarily, the instrument was exposed by creating a 2mm trough around the fractured instrument with the aid of surgical microscope. After exposure futile attempts were made to retrieve the instrument with mosquito forceps and ultrasonics. Contingency plan was developed and retrieval was planned to be removed by hypodermic needle and an adhesive. A 25 gauge syringe needle with its bevel removed was used to check the fit of separated instrument (fractured part of Lentulo spiral) extra orally. Cyanoacrylate adhesive (Fewi Kwik, Pidilite) was aspirated in to needle bore and placed immediately on to the exposed part of the fractured instrument in the canal. After the set of cyanoacrylate the needle was grasped by the hub and rotated in a counter clock wise and downward pressure. The fractured instrument was successfully retrieved from the canal with this movement.



**Figure 3: Retrieved lentulospiral along with hypodermic needle**

Later the root canal treatment was completed in subsequent visits, by using gutta percha (ProTaper) points and calcium hydroxide sealer (Apexitplus, Ivoclar).



**Figure 5: Post-obturation radiograph**

## Discussion

When an instrument gets separated in the root canal, the clinician must evaluate carefully the options, like attempting to remove the instrument, to bypass the instrument, or preparing and filling till the fractured instrument.<sup>4</sup> At times the clinician may be faced with a situation where a fractured instrument may be bound in the canal system, in hard-to-reach areas that do not allow direct vision or straight

line access. The difficulty in the retrieval of these instruments ranges from surprisingly easy to downright impossible. If removal is attempted, many factors have to be considered and the chances of success should be balanced against potential complications.<sup>5</sup> Parashos and Messer<sup>6</sup> outlined the factors to be considered to treat a case of separated instrumented as

1. Preoperative pulpal and periapical diagnosis
2. Extent of chemo-mechanical debridement prior to instrument breakage
3. Position of the fractured instrument, i.e, is there direct vision and adequate straight line access?
4. Length of fragment
5. Anatomy of root
6. Can the instrument be bypassed?

In the presented case Lentulo spiral was fractured to the full length in the distobuccal canal, bypassing the instrument was seemingly difficult, though cleaning and shaping was done considering the periapical pathosis obturating the tooth till the apex and creating a hermetic seal was our prime requisite.

Many instrument retrieval techniques have been described such as Masserann-kit, ultrasonics, the canal-finder system, the tube and Glue method, Hedstrom technique and use of chemical agents such as iodine trichloride. Most of these methods are not conservative and/or safe for the removal of fractured instrument.<sup>7</sup> Conventional and practical methods have to be developed keeping in view of a particular scenario and the availability of the equipment. Use of ultrasonics which is safe and conservative<sup>8,9</sup> was considered for making a initial trough in the root dentin so as to expose the separated instrument. The lentulospiral was vibrating within the canal when ultrasonics was used but was not loosened, there was no enough exposed part of the instrument to be grasped and pulled out with a mosquito forceps.

Eleazer P and O'Connor R<sup>10</sup> have first described the use of hypodermic needles for instrument removal. A prototype of tube and Glue method was developed using chair side instruments, a 25G new syringe with its bevel removed and a commercially available cyanoacrylate was used for retrieval of the instrument.

The advantage of using cyanoacrylate technique is its conservative approach, economical and availability of the apparatus. Considering studies which states that when the root canal is enlarged by MAF #30, the tip of the 30G needle, can theoretically reach the working length,<sup>11</sup> hypodermic needle can be effectively used to engage the separated instrument even if it is separated in the apical part of the canal. Complications of this technique can be because of the adhesive, which can flow into the canal because of its low viscosity and clog the canal, which is likely to happen more in mandibular teeth. Considering the short setting time of the adhesive once exposed to atmosphere and taking care not to inject the adhesive into the canal these problems can be overcome.

In comparison to other the use of hypodermic needle and adhesive in retrieval of separated instrument, is a conservative, simple and quick to perform technique.

### Conclusion

This case report has described a conservative, safe and plausible technique for removal of fractured instrument (lentulospiral) below the level of orifice using hypodermic needle and cyanoacrylate adhesive.

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