CASE REPORT

MANAGEMENT OF ROOT CANAL TREATED TOOTH OBTURATED WITH INSTRUMENTS- A CASE REPORT

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ABSTRACT

Even though rotary instruments pose varied extent of flexibility and ease of use, they are not free from disadvantages. Endodontic mishaps are not uncommon in clinical practise. Management depends on the clinical scenario and also on the outcome of weighing the risks and benefits. This case report presents nonsurgical retreatment of a maxillary left premolar previously obturated with fragmented root canal instrument.

Keywords: fractured, instrument, obturation, root canal.

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INTRODUCTION

Rotary instruments have revolutionised the branch of endodontics to a great extent with its extereme property of flexibility. This has its remarkable impact in providing quality treatment, reducing operator fatigue and time invested for each case. Even with these advantages, procedural accidents can interfere the sequential phases of root canal treatment at any stage as all steps are co-dependent and correspondingly vulnerable to iatrogenic errors. In majority of the cases, such mishaps arise because of the working dentist's specious manipulation and negligence to detail whereas in few situations, random or unpredictable errors might occur.[1] When an error either intentional or accidental occurs during root canal procedure pose a great risk of treatment failure and related complications. A separated endodontic file in the canal may cause anxiety, anguish, and agony to the patient.[2]

This article shows a case report of nonsurgical retreatment of a maxillary left premolar previously obturated with fragmented root canal instrument.

Case report

A 29 year old male patient reported with pain and swelling on the gums in relation to upper left tooth since 1 week. Patient gave a history of root canal treatment done on that area few years back.

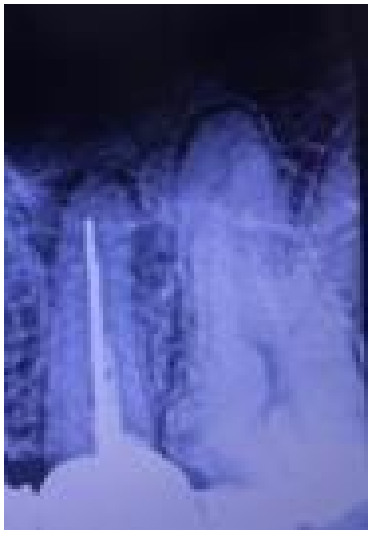

Figure 1: Pre-operative IOPAR

On clinical examination, it was observed that the patient had a mild swelling on the gingiva in relation to the buccal aspect of 25. The area was soft tenderness on percussion was appreciated w.r.t 25. There were no signs of mobility or other periodontal involvement. The tooth had metal ceramic crown over it. On radiographic examination, it was found that the tooth was obturated with root canal instrument similar to H file, which was found to be a strange old way of root canal obturation technique. The obturated instrument covered more than two thirds of the canal. The obturation was short of apex by around 2-3 mm. Periapical radiolucency around the root apices and lateral surfaces of root could be appreciated. [Figure 1]

Conventional retreatment was planned, keeping in mind the quality of preceding obturation and the periapical status of the roots. Since the dental crown had an appreciable adaptation and marginal fit, access through the crown was decided for retreatment of the tooth. Prior to the start of treatment, informed consent was obtained from the patient. Root canal retreatment was initiated with adequate access preparation, refined using a trans metal bur. Amalgam restoration was removed until the instrument was made visible. Using hand files 08 and 10 Mani K files the instrument was bye passed. The ultrasonic tip Start X # 4 was used to trough around the instruments in both the canals. With the

Figure 2: Instrument removed from the canal

help of ultrasonic vibration the obturated piece of instruments started loosening from the canal and were retrieved in single from each canal. [Figure 2]

The retrieved fragments measured around 13 mm and 15 mm. [Figure 3] The canals were then negotiated till the apex using 08 and 10 K files. Working length was calculated using Woodpex 3 apex located which was correlated with X ray measurements. Cleaning and shaping was done with Neo Endo Flex files 17/4%, 20/4%, 25/4% and 30/4%. Simultaneous irrigation of the root canals were done with 17% EDTA solution and 5.2% Sodium hypochlorite with intermittent saline irrigation. Circular counter clock motion agitation was used using ultrasonics for enhancing the action of irrigants used. Calcium hydroxide and Iodoform mixed Metapex was used as an intracanal medicament for a period of 1 month. The canals were dried and filled with gutta-percha and sealer cement. The access was temporized with CaviTemp. Analgesics were also prescribed for 3 days.

The patient was recalled after a period of 1 month and was examined for any symptoms. The swelling present on the gingiva in relation to 25 got subsided and no tenderness on percussion noted. The access

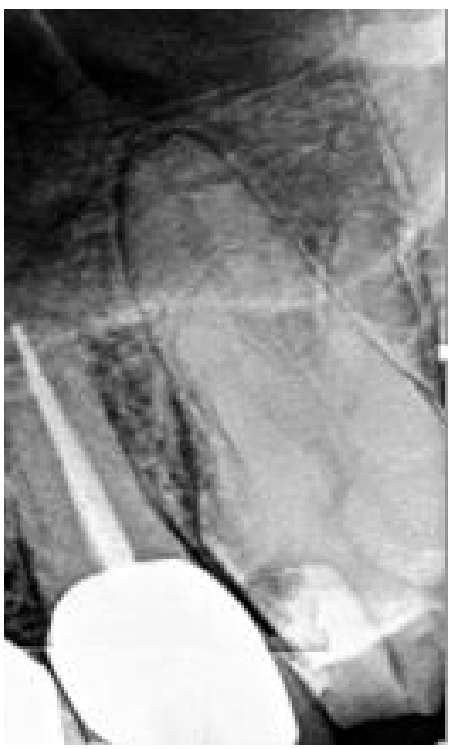

Figure 3: Retrieved instruments

Figure 4: Post-operative IOPAR

was re-established and intra canal medicament was removed. Irrigation protocols were followed. The master apical GP was inserted to the working length and radiograph was taken, following which the GP points were obturated using single cone obturation technique using AH plus sealer. The access was temporized. The permanent filling was done with composite resin material after 2 days and occlusion was verified. On subsequent recall visits, the patient was found to be asymptomatic. [Figure 4]

Discussion

In the current case, the root canal was obturated with fragmented instrument, which was found to be quite lengthier when compared to other cases. The longer fragment of instrument leaves behind the question whether the fracture was intentional or accidental. The patient was not informed about the fragment by the first dentist.

The foremost concern is that a detached instrument can hamper the disinfection and cleaning of root canal, influencing the treatment outcome indirectly. Therefore, the benefits of retrieval should be weighed against the risks of other complications that could occur during the retrieval process.

Generally the two common approaches for management of root canals obturated with fragmented instruments are surgical and non-surgical methods: These include retaining the separated instrument in the canal while treating the remaining portion of canal, bypassing the fragment and treating the remaining canal, retrieval of the separated fragment, followed by treatment of canal and adopting surgical methods for instrument retrieval and subsequent treatment.[3,4]

In this case scenario, being a more conservative approach, the non-surgical endodontics was attempted for the retrieval of instrument and re-treatment. Both tooth related and instrument related factors influence the non-surgical retrieval of instruments. Instrument related factors include the size, position, length, type and diameter of the fragment inside the root canal whereas root dentin thickness, canal anatomy and concavities constitute the tooth related factors.

Among the various retrieval techniques like ultrasonic tips, drills, extractors, dental operating microscopes, and electrochemical processes, ultrasonic tips were chosen in this scenario 5 due to various advantages in instrument retrieval such as minimal dentin damage and compatible tip designs, which can reach the apical third of the canal. NiTi instruments may undergo further fracture due to heat build-up when ultrasonic devices are used for their retrieval whereas the stainless-steel files do not fracture upon removal with ultrasonics. In case of the SS fragments, they absorb the ultrasonic energy bodily whereas only the point of contact with the tip absorbs the energy in case of NiTi fragments.[3]

Although certain mishaps are unpredictable and cannot be prevented, extra caution should be exercised while performing root canal treatments. Vigilant appraisal of the case and determination of the probable threats should be kept in mind before attempting the removal of the instrument.

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