

# Endodontic management of foreign body in the root canal- case series

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**Abstract-** A foreign body in the root canal is often diagnosed accidentally. It is usually seen in children but not uncommon in adults. Mostly, the foreign objects get trapped in canal and act as a possible cause of infection. Thorough case history, clinical and radiographic examinations are essential to determine the nature, size, location of the foreign body and the difficulty involved in its retrieval. The purpose of this case series is to report two cases of triumphant orthograde retrieval of foreign objects from the canals of incisors, avoiding the need for surgical intervention.

**Index Terms-** Foreign body, watch dial, habits

## I. INTRODUCTION

Incidence of foreign object in the pulp chamber and root canals is most frequently seen in children because of the habit of inserting them into the mouth (1). It is not uncommon in adults, as they hold or pull things with their teeth during their day-to-day activities or for occupational reasons. Sometimes these objects get stuck in the root canals of the teeth. Adults do not report unless they become symptomatic. Often such objects can act as a potent focus of infection which is followed by complications. This is more likely to occur in a tooth with an open pulp chamber caused by trauma, caries or in case of incomplete root canal procedures.

Many authors have reported objects like screws, staple pins, pencil leads and tooth picks (2-4). In some cases, the tooth remains asymptomatic and presence of foreign body revealed only during routine radiographic examination. It may be associated with pain, swelling and recurrent abscess. Presence of these objects prevents thorough instrumentation of root canal system. So, their removal is necessary to re-negotiate the canal and complete the endodontic treatment successfully. The objects can be retrieved with some ease if they are located within the pulp canal. But once the object has been pushed apically, their retrieval becomes complicated and surgery becomes unavoidable.

### Case report 1:

A 32 year old male patient reported with the chief complaint of pain in the upper front tooth. History revealed that he got his front tooth fractured after trauma due to fall injury before 2 years. Clinical examination revealed fracture (Ellis class 3) and associated discoloration of the crown in tooth #8. An intraoral periapical radiograph revealed the presence of a radio-opaque object inside the root canal for its full length (fig 1a). After considering the clinical and radiographic findings, an attempt to

retrieve the foreign object and thereafter completing the root canal treatment was planned.

A conventional access cavity was prepared under rubber dam isolation. K- files were used to bypass the foreign object. Alternating irrigation of sodium hypochlorite (Parcan, Septodont, India) and saline was done. After a series of attempts, the object moved coronally and was pulled out with a tweezer. Retrieval of foreign body in the root canal was confirmed with a radiograph. The object was a watch dial golden brown in colour and measured approximately 10mm in length (fig 1b). Working length was estimated and biomechanical preparation was completed. Finally, the root canal was irrigated with saline and chlorhexidine was used for final rinse. An intra- canal medicament containing calcium hydroxide was administered. In the next appointment, obturation of the tooth was done with gutta-percha using lateral condensation technique (fig 1c).

### Case report 2:

A 26-year-old girl presented with the chief complaint of fractured crown in the upper front tooth. Patient gave the history of trauma 3 years back for which the patient had undergone treatment by a trained dental person and was given a full crown restoration. The tooth was asymptomatic after the treatment. On examination, right central incisor was fractured at the level of cervical third of the crown and it was tender on percussion. A transparent shelf cured resin restoration with metallic pin- like object snugly fitting inside the canal was seen protruding from the orifice. Radiographic examination revealed radiopaque object in the canal extending till middle third of the canal (Fig. 2a). The tooth was isolated, The crown shape restoration along with metal extending into canal was removed by extraction forceps successfully with the same. The object was a metal pin about 10 mm in length which was used, probably like a post to retain the crown restoration (Fig. 2b). Working length was determined radiographically and the canal was negotiated till the full working length. access cavity was cleaned, reshaped, and the pulp chamber was irrigated with normal saline and closed dressing was given. patient recalled for routine endodontic treatment but she does not come due to examination.

## II. DISCUSSION

Numerous cases have been reported delineating various foreign objects being lodged inside the root canal system. Root canal can be blocked by the presence of broken instruments, canal obturation materials, and in some cases, by foreign objects inserted by the patient himself. The habit of placing objects into the mouth develops from the childhood and in some individuals

this persists for years or even throughout the life. Self-mutilation is a behaviour commonly observed in patients with psychological depression where they violently inflict lesions to their own bodies deliberately or accidentally. Various objects have been reported to be lodged in the pulp chamber and root canal of teeth, such as pencil leads, metal screws, beads, stapler pins, nails, pins, wooden tooth picks, tooth brush bristles, crayons, and pieces of other plastic and wooden pieces.

Objects lodged in root canal can be categorised into metallic and non-metallic objects. Metallic objects are readily recognized from routine radiographs as they are radio-opaque. McAuliffe summarized various radiographic methods to be adopted to locate the radio-opaque foreign objects, such as parallax views, vertex occlusal views, triangulation techniques, stereo radiography, and tomography (3). Specialized imaging techniques such as cone beam computed tomography (CBCT) can also assist in the localization (5). Whenever resistance is felt in the canal and it is not visible in radiographs then careful instrumentation with ultrasonics under dental operating microscope can be of immense help in diagnosis and retrieval procedures (6).

A conventional practice employed during emergency root canal treatment involves leaving the pulp chamber open where pus continues to discharge through the canal and cannot be dried within a reasonable period of time. This is the most common reason for lodgement of foreign objects in the pulp chamber and root canals. Weine recommends that the patient remains in the office with a draining tooth for an hour or even more and finally ending the appointment by sealing the access cavity (7). With the access cavity closed, no new strains of microorganism system are introduced and food debris and foreign body lodgement within the tooth can be avoided. If a clinician decides to leave the pulp chamber open following access cavity preparation, the patient should be warned about the risks of any foreign object being lodged in the open canal. However, the clinician should always consider the benefits and risks associated with leaving the pulp chamber open for prolonged periods of time.

Foreign bodies in root canals can act as focus of infection. Foreign bodies pushed through root canal into the sinus are one of the causes of chronic maxillary sinusitis of dental origin (4). Actinomycosis following placement of piece of jewellery chain into a maxillary central incisor has been reported (8). Hence, extreme care should be taken not to push the object beyond the apex. Retrieval of foreign objects lying in the pulp canal using ultrasonic instruments (6), the Masseran kit (9), modified Castroviejo needle holders (10) have been described in the literature. There is also a description of an assembly of a disposable injection needle and thin steel wire loop formed by passing the wire through the needle being used. This assembly was used along with a mosquito haemostat to tighten the loop around the object (11). Nehme (12) had recommended the use of operating microscope along with ultrasonic filing to eliminate intra-canal metallic obstructions. According to Walvekar et al (13), if the foreign object is snugly bound in the canal, the object may have to be loosened first; it should then be removed with minimal damage to internal tooth structure to prevent perforation of the root. Extreme patience and caution is needed to prevent the fracture of the instrument that is being used to retrieve the foreign object.

In the present case reports, the foreign objects were located within the root canal and retrieved successfully by a simple nonsurgical technique. It is essential that the dentist, when faced with retrieval of a foreign body, obtains a thorough history, carries out a detailed examination and necessary investigation to determine the position, size, likely composition, and degree of difficulty that will be encountered during its retrieval.

### III. CONCLUSION

Orthograde removal of foreign objects from root canal is usually a significant challenge to the practitioners. Detailed case history taking and clinical and radiographic evaluation are necessary to come to a conclusion about the nature, size, and location of the foreign body. Careful instrumentation with patience is needed for retrieval of the foreign body. The utmost importance is to prevent further complications.

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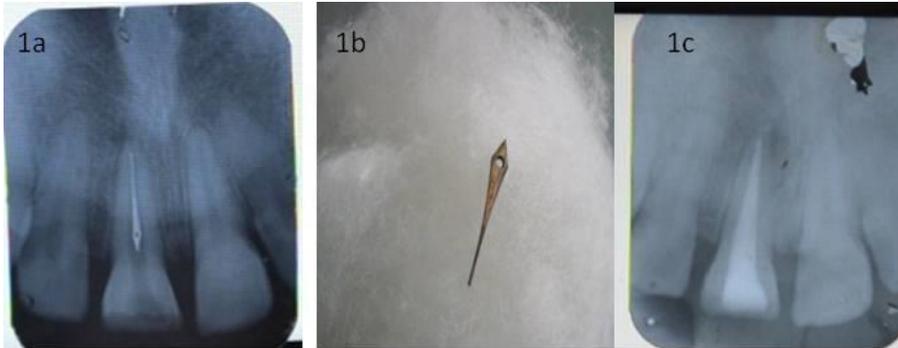
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Figure 1.

1a. Intraoral periapical radiograph revealing the presence radio-opaque slender object in the root canal of tooth

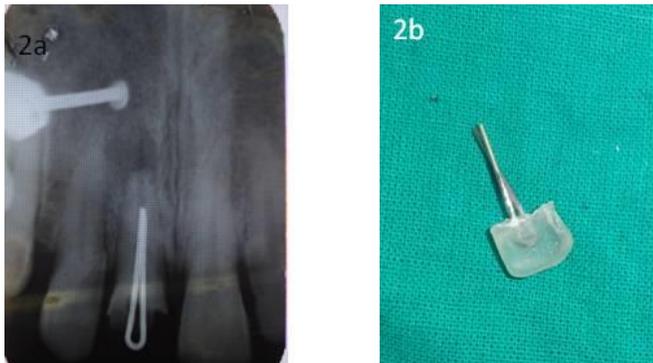


11.

1b. Retrieved 'watch dial'

1c. Post – obturation radiograph

Figure 2



2a. IOPA reveals radioopaque object placed in root canal of 11.

2b. After the removal of metallic pin.