

CASE REPORT

Endodontic Management of Foreign Body Impaction in Teeth

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ABSTRACT

Foreign objects are often diagnosed unexpectedly during a dental treatment. The occurrence of foreign bodies in teeth is more frequent in children, as they have a tendency to place objects in mouth. Food lodgement in carious involved teeth also lead to object lodgement as patients tends to clean it with sharp objects. The foreign objects act as foci of infection and leads to pulpal pathosis. This case report discusses the foreign body impaction in a tooth, its retrieval and management of the involved teeth.

Keywords: Central incisor, Endodontic management, Foreign body.

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INTRODUCTION

The diagnosis of foreign objects often occurs unexpectedly in the dental scenario often during a radiographic evaluation. Thorough clinical examination and radiographic examinations are to be carried out to confirm the presence, size, location, and the type of the foreign objects. Foreign bodies are commonly found in the oral and nasal cavities of children, and are diagnosed by the dentist during routine examinations.¹ The occurrence of foreign bodies, such as metal screws,² staple pins,^{3,4} darning needles,⁵ pencil leads,⁶ beads,⁷ and toothpicks impacted in the carious exposed pulp chambers or traumatically injured permanent and deciduous teeth has been reported. Foreign objects act as a potent source of infection. The chance of these foreign objects impaction into the tooth is more when the pulp chamber of the teeth is open either of large carious exposure or a

traumatic injury. Retrieval of foreign objects from the root canal is a challenging procedure and these must either be removed from the root canal without changing the canal morphology or be bypassed.⁸ These can be easily retrieved if they are located within the pulp chamber, and if they got extruded apically, procedure will get complicated. In that case periapical surgical techniques may be required. This case report describes retrieval of foreign body from a tooth and management of the involved teeth.

CASE REPORT

A 30-year-old male patient reported to the Department of Conservative Dentistry and Endodontics, with a history of pain in the maxillary right central incisor (#11). The tooth had dental trauma 5 years back. Endodontic treatment was initiated previously in a private clinic after the trauma; however, the patient did not complete the treatment. Intraoral examination revealed complicated crown fracture (Ellis class III) of #11, 12, 41 (Fig. 1). An open root canal was seen on #11 and was tender on percussion. The periapical radiograph revealed a linear radiopaque object in the root canal of #11 extending up to apical third of the canal with periapical radiolucency (Fig. 2). Teeth #21 and #41 were also fractured. On cold test and electric pulp testing, #11, 12, 41 were nonvisual. Based on clinical and radiographic findings, a diagnosis of previously initiated therapy with symptomatic apical periodontitis (#11) and irreversible pulpitis with respect to #12 and 41 was reached. After oral prophylaxis, the tooth(#11) was anesthetized and isolated. Following complete removal of debris using ultrasonics, access cavity into the pulp chamber was reformed using thin, tapering, diamond fissure bur. The pulp chamber was irrigated copiously with 5.25% sodium hypochlorite solution. The root canals were explored by K-file ISO no. 10 with a lubricant (Glyde Dentsply Maillefer, Ballaigues, Switzerland). After several attempts the object was bypassed (Fig. 3), a path glide was created by using K-Flexofiles ISO No. 15, 20 and 25 (Dentsply Maillefer, Ballaigues, Switzerland), then the Hedstrom files ISO No. 25, 30, 35 and 40 used to loosen the object. Wide bore needle with cyanoacrylate was used to retrieve the objects which were like stainless steel wire (Figs 4 to 6).

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Fig. 1: Preoperative photograph



Fig. 2: Preoperative radiograph



Fig. 3: Foreign body bypassed

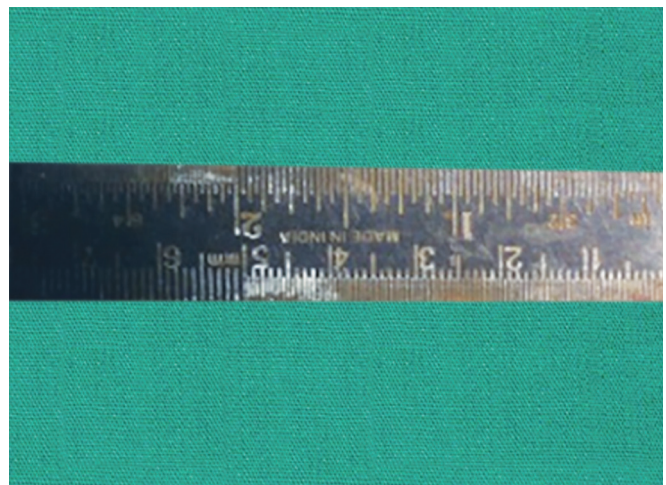


Fig. 4: Retrieved foreign body



Fig. 5: Wide bore needle with cyanoacrylate

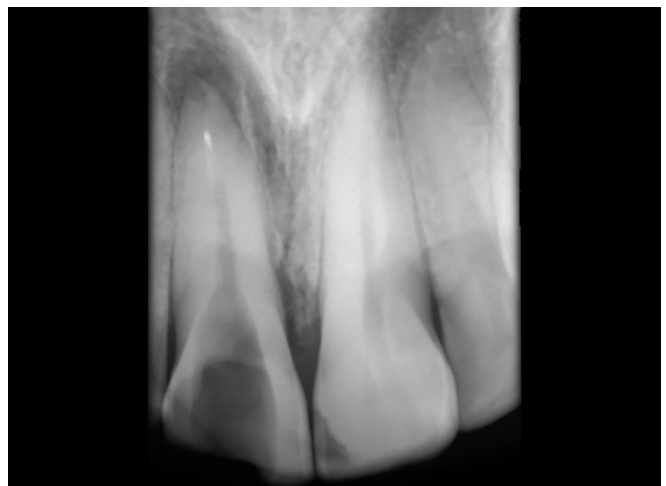


Fig. 6: Foreign body retrieved

The root canal was shaped with F5 ProTaper rotary instrument (Dentsply Maillefer) with copious irrigation of 5.25% sodium hypochlorite solution and filled with calcium hydroxide paste, then the tooth was sealed with temporary restoration. Three weeks later, the patient recalled for the completion of root canal treatment. The

calcium hydroxide was removed, the canal was dried and a gutta-percha (Dentsply Maillefer, Ballaigues, Switzerland), custom master cone (No. 120) to the full working length was radiographically confirmed (Fig. 7). Then the canal was sectionally obturated and fiber post (Angelus Reforpost Glass fiber RX Kit) was fixed (Fig. 8).



Fig. 7: Master cone selection



Fig. 8: Postoperative radiograph

Final restoration was done with all ceramic crown. Teeth #12 and #41 were also endodontically treated and all ceramic crown were luted.

DISCUSSION

Discovery of foreign bodies in the teeth is mostly an accidental diagnosis. These objects can be fractured instruments, obturation materials, and objects inserted by the patient. It can occur in patients when canals have been left open for drainage or after trauma. The foreign objects act a source of infection and prevent thorough instrumentation of root canal system and adversely affect the outcome of successful endodontic treatment. Goldstein et al has reported actinomycosis following placement of piece of jewellery into a maxillary central incisor.⁹

If the foreign body is radiopaque, a radiograph can be of diagnostic significance. Foreign objects can be metallic or nonmetallic. Macauliffe⁴ described radiographic methods, such as Vertex occlusal views, parallax views, stereoradiography, triangulation techniques and

tomography to localize a radiopaque foreign object. Due to relatively high radiation exposure to eye and the primary beam being aimed toward the abdomen, vertex occlusal view is no longer opted. In triangulation technique, two views right angle to one another is used. Superimposition of the other incisor teeth over the root makes the interpretation difficult. Stereographic views and tomography availability in a dental operator is very minimal. Newer radiographic techniques, such as radiovisiography, 3D CAT scans can help to localize these foreign objects inside the root canal.

The nonmetallic objects are invisible in radiographs. So when difficulty to negotiate root canal occurs in a tooth which has been left open for long-time or traumatically fractured occurs, thorough history taking, clinical and radiographic examination are to be done to prevent the apical extrusion of foreign objects.

CONCLUSION

A nonsurgical procedure was employed to retrieve the foreign object in the root canal in the present case. History taking, radiographic and clinical examination and patient cooperation will help in the management of the situation. For complicated cases, a surgical procedure may be the only alternative to eliminate pain and infection. A classification of foreign bodies in the teeth and a treatment algorithm to be followed in these clinical situations is a definite need.

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