



Endodontic Retrieval of Unusual Foreign Object from Root Canal of a Maxillary Central Incisor- A Case Report with 1 Year Follow-up and an Update

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Authors' contributions

This work was carried out in collaboration between all authors. Author KSR designed the study, wrote the protocol and wrote the first draft of the manuscript. Author AG managed conductance of the study. Authors RGR and VA managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/IJMPCR/2016/26484

Editor(s):

(1) Manuel Marques Ferreira, Area of Dentistry, University of Coimbra, Portugal.

Reviewers:

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Complete Peer review History: <http://sciencedomain.org/review-history/15347>

Case Study

Received 20th April 2016

Accepted 7th June 2016

Published 9th July 2016

ABSTRACT

Aim: To enlighten and update the clinicians about the diagnosis and management of foreign body entrapment in root canal of a tooth.

Case Presentation: The current case is of a single, uncommon case of a stapler pin in the root canal of maxillary central incisor. Ellis class III fracture was noticed without any sinus tract opening or swelling. Endodontic retrieval and management with subsequent one year follow up.

Discussion: Habitual oral insertion of foreign objects by children and their accidental entrapment into the teeth are frequently reported. Sometimes these may get diagnosed accidentally. The

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particles retrieved, ranged from staples, pencil leads, needles, screws, beads and pins. Several complications have been reported like actinomycosis and sinusitis due to foreign bodies acting as foci of infection and that have not been removed in time.

Conclusion: Foreign objects are possible source of infections and must be removed immediately once noticed.

Keywords: Foreign object; stapler pin; root canal space.

1. INTRODUCTION

Presence of foreign objects in the root canal space, sometimes accidentally noticed by clinicians. Some children have the tendency to insert objects into oral cavity, particularly high when pulp chamber is open either because of traumatic injury or large carious exposure. They are a possible source of infection and must be removed immediately [1]. Retrieval of foreign bodies is easy as long as they are confined to the pulp chamber but complicates once they are pushed towards the apical region of tooth [1,2]. Surgical procedures sometimes may be warranted to reclaim the object. The following case report describes identification and management of foreign object embedded into the root canal space of maxillary right central incisor.

2. PRESENTATION OF CASE

A 13 year old healthy female patient was referred to the Department of Pedodontics and Preventive Dentistry, Drs. Sudha & Nageswar rao Siddhartha Institute of Dental Sciences, Chinnoutpalli, Gannavaram, with a chief complaint of severe pain in the upper central incisor region since one week, so patient was referred to specialist. Pain was sharp and non-radiating. No discernible facial swelling was observed. Intra oral examination revealed Ellis class III fracture of the right central incisor with open pulp chamber occluded with food material (Fig. 1). The referring dentist had performed pulpectomy followed by a temporary seal with zinc oxide eugenol restorative material two months prior to the present visit and recalled the patient for obturation. Childs parents mentioned that they failed to attend the appointment and the restoration was lost.

Intra oral periapical radiographic examination of the region revealed the presence of a radio-opaque object in the root canal space of maxillary right central incisor spanning its extent from cervical region up to apical one third of the root (Fig. 2a). It was decided to retrieve the foreign object by nonsurgical means and thereafter complete the endodontic treatment.

Rubber dam isolation of the tooth followed by removal of food plugs using a spoon excavator was performed. The pulp chamber was then irrigated with 5% sodium hypochlorite solution and the access cavity was refined. An ISO no. 20 H-file (DENTSPLY Maillefer, Ballaigues, Switzerland) was inserted between the dentinal wall and the foreign body and bypassed along its length. The circumvented file was thus engaged with the foreign object and retrieval was attempted by gentle coronal rasps. The loosened object was grasped with a tweezer and removed from pulp chamber. The retrieved object was found out to be a staple which was roughly nine millimeters in length (Fig. 3).



Fig. 1. Fractured right maxillary central incisor



Fig. 2. a, Foreign object found in root canal of maxillary right central incisor; b, After removal of object, subsequent mechanical preparation; c, After completion of obturation

The root canal working length was measured by Radiographic method followed by cleaning and shaping was done with hand files and liberal irrigation of 5% sodium hypochlorite (Fig. 2b). The canal was dried with paper points and the tooth received calcium hydroxide dressing. The child was recalled after one week and obturation completed by using Gutta-percha and a resin sealer (Fig. 2c). On a follow-up examination after twelve months, the tooth was asymptomatic with no radiographic changes (Fig. 4).

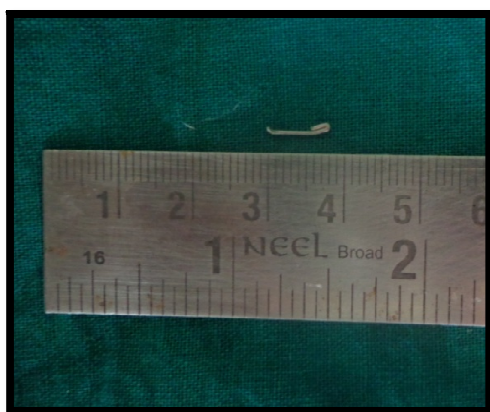


Fig. 3. Measuring foreign object (stapler pin)



Fig. 4. Post operative radiograph- After 12 months

3. DISCUSSION

Individuals inserting objects into the teeth is a common phenomenon irrespective of age with case reports mentioning different ages including

a two year old child to more than 50 year old [1,2]. However, most of the reports cited foreign bodies in both deciduous and young permanent teeth indicating the tendency of children to place objects into mouth [1,3-7]. The particles retrieved, ranged from staples, pencil leads, needles, screws, beads and pins [1-4]. Wataru Motokawa, Yutaka Yoshida (1985) [1] reported a plastic chop stick while retrieved adsorbent points and also a tomato seed. Lamster IB, Barenie JT (1977) [3] found unusual objects, might be straws and conical metallic objects. Sometimes these are infectious. Parents or guardian have to be watchful over this type of deleterious habits. A thorough history particularly concerning the habits of the child may elicit vital information regarding the nature of objects. The parents of this child denied any history of child placing the objects into the mouth. The child might have attempted removing the food debris accumulated in the access cavity with the staple and in the process, pushed the object into the root canal space. They were shown the retrieved staple and were counselled to be observant regarding her habits.

One of the conventional methods followed after an emergency root canal access opening to drain pus is to leave it open to facilitate the pus drainage [4]. However, this may enable a potential child to insert a foreign body into the tooth. Also, the open cavity is a harbinger for food entrapment aggravating the already persisting infection. To avoid this, access opening must be closed as soon as possible with a good sealing restorative material so as to prevent the ingress of new strains of microorganisms, food debris as well as foreign bodies [5]. Weine FS [6] recommended a practice of waiting for one hour after access opening so as to drain pus before going for a seal.

Advanced diagnostic aids such as Radiovisiography (RVG) and three dimensional computerized axial tomography (CAT), cone beam computed tomography (CBCT) sometimes may be required, especially to localize the foreign objects in the root canal [7]. A simple periapical radiograph (IOPA) was sufficient in this case as the object was radioopaque and could be localized by IOPA itself. Patient had a nose ring which her parents declined to remove and this was not a limitation for IOPA as the ring was not obliterating the diagnostic area. Taking the above into consideration, it was felt that there was no necessity for any other diagnostic aids.

Several complications have been reported due to foreign bodies acting as foci of infection and that have not been removed in time. Retrieval of the foreign body is the immediate goal in such type of cases. Surgical maneuvers may be necessary when object is pushed more apically [8,9]. Also, recovery of the object gets complicated if it gets locked into the dentin. So the objective is not to push the object apically as well as lubricating the canal to prevent its wedging. Non surgical means of retrieval are preferred particularly in a young permanent tooth as the tooth is immature. Ultrasonic instruments, Masserann kit, modified Castroviejo needle holders, Stieglitz forceps are currently being used to retrieve foreign bodies while an operating microscope to visualize any intraradicular metallic obstructions [2,7,10]. Access to the foreign body was improved by flaring the canal coronally. By passing of H-file along the length between the object and the dentin wall was preferred in this case as the tooth is immature and the object was neither in the apical region nor binding to the dentin. Due care was taken not to push the object apically. EDTA was used as a lubricating agent since it was found that EDTA was effective while retrieving a foreign object.

4. CONCLUSION

Foreign bodies in the teeth of children are a frequent occurrence as supported by the literature. Broken appointments and deleterious habits might lead to this type of mishaps and can be averted by counseling, educating and motivating the parents.

CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this paper and accompanying images.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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