



RETRIEVAL OF FOREIGN BODY FROM THE ROOT CANAL OF MANDIBULAR INCISOR- A CASE REPORT

Dental Science

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ABSTRACT

The fracture of a foreign object inside a root canal is rare. Due to inserting foreign object to remove food or to relieve discomfort some people fracture those foreign objects in the teeth. These foreign objects may lead to severe complications as it acts as the foci of infection. Proper case history and radiographic examinations between appointments will aid in the discovery of such foreign body inside the root canal. This paper describes the successful retrieval of sewing needle located in the middle third of root canal of the mandibular incisor by nonsurgical braiding technique.

KEYWORDS

Broken needle fragment, foreign body in root canal, foreign body retrieval, Braiding technique.

INTRODUCTION

Occurrence of foreign object in the pulp chamber and root canals are seen more often in children as they have the habit of inserting things into their mouth. It is not infrequent in adolescent and adults also. [1] In literature, it has been accounted that object like screws, staple pins, pencil leads, and tooth picks were found in root canals. [2-4] In few incidences, the presence of the foreign body was identified only during routine radiographic examination as the teeth were asymptomatic. But generally, patients report to the dentist regarding foreign objects inside root canal as it may be associated with pain, swelling and recurrent abscess. This may become even more complicated if these impacted foreign objects are not removed. [5] The elimination of foreign object from the root canal is very challenging as it is necessary to remove the foreign objects without destroying the morphology of root canal. It also requires proper shaping and cleaning and copious irrigation to remove the obstacle from the canal. [6] Their elimination is required to re-negotiate the canal and complete the root canal therapy.[1]In this case report, removal of a fragment of sewing needle from the root canal of mandibular anterior tooth is discussed.

CASE STUDY

A 15-year-old boy presented to the department of conservative dentistry and Endodontics with the chief complaint of pain in left lower front tooth region for past one week. Patient gave the history of trauma 3 years back. Endodontic therapy was initiated elsewhere three years ago but patient had discontinued the treatment after the first visit due to complete pain relief. Preoperative radiograph was taken which revealed a radio opaque material in the middle third of the root canal and periapical radiolucency was seen in 41. [Figure 1]



Figure 1- Preoperative radiograph showing the presence of foreign body in 41

After detailed questioning, the patient admitted that he placed a sewing needle in the tooth to relieve discomfort which had eventually fractured. On clinical examination, ISO #15 K-file didn't pass through the obstruction in the middle third of tooth numbered 41. Coronal flaring was done using Gates Glidden drill [size 3] and ISO # 10 K-file was used in pecking motion around the walls where obstruction was present. EDTA [Ethelene diamine Tetraacetic Acid] was used as a chelating agent and irrigation was done intermittently. As the obstruction could not be bypassed, EDTA was placed in the canal and closed dressing was given, patient was asked to report in the next appointment. During the second visit, thorough Irrigation was done, ISO # 15 K-file was used in pecking motion around the walls where obstruction was present, a catch was felt between the obstruction and root canal wall. Then #10 K-file was used in watch winding motion with frequent copious irrigation until the obstruction was bypassed [Figure 2].

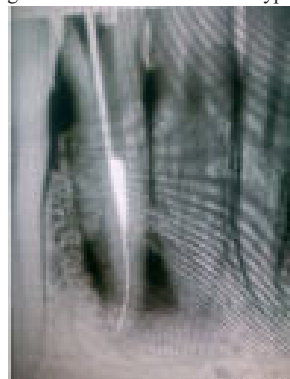


Figure 2- Radiograph showing #15 K-file bypassing the sewing needle fragment in 41. Then the canal was instrumented using ISO # 25 and # 30 K-file. Then braiding technique was done using two # 15 K-file and one # 20 K-file [Figure 3]

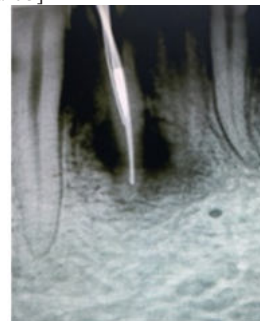


Figure 3- Radiograph showing 3 K-files braiding the sewing needle fragment in 41

In this technique, the respective files were inserted till the apex one by one around the obstruction, the handles of the files were held together and twisted in clockwise direction to engage the sewing needle fragment. When a tension was felt, the braided files were pulled out of the canal. This helped in retrieving the sewing needle fragment [figure 4]



Figure 4- Photograph of retrieved sewing needle fragment from the root canal of 41

Radiograph was taken to ensure the complete retrieval of the sewing needle fragment. [Figure 5]

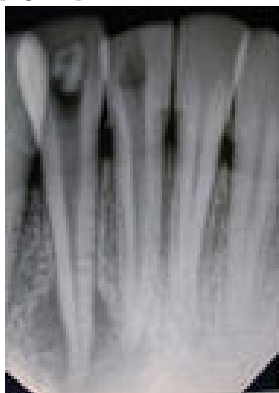


Figure 5- Radiograph showing root canal after retrieval of sewing needle fragment

Then shaping and cleaning was done using step back technique. Irrigation was done using three percent sodium hypochlorite, ethylenediamine tetra acetic acid [EDTA], and isotonic saline. Closed dressing was given with calcium hydroxide as intracanal medicament. Patient was asked to report after a week for obturation. Obturation was done with the help of 2% GP points using cold lateral condensation technique [Figure 6]



Figure 6- Radiograph showing obturation done in 41

Cervical third of canal was restored using glass ionomer cement followed by entrance filling using light cure composite resin restoration. It was followed by fixed prosthesis. On a follow-up examination after six months, the tooth was asymptomatic.

DISCUSSION

Obstruction of root canals of a tooth can happen by the presence of

broken instruments, canal obturation materials done iatrogenically or foreign particles inside root canals due to trauma, and in some rare occurrences it may be because of the foreign objects inserted by the patient himself.[1] It can occur in patients undergoing root canal treatment in which the provisional restoration fractures or open canals due to trauma or if it was left open for drainage. In this case, a sewing needle was fractured inside the canal by the patient as he was trying to ease the discomfort felt inside the canal. During emergency root canal treatment, conventionally the pulp chamber is left open where pus continues to discharge through the canal and cannot be dried within a reasonable period of time. It is the most common reason for lodgement of foreign objects. Weine [7] suggested to seal the access cavity preparation at the end of an appointment even if it has to make the patient with draining tooth stay in the dental office for an hour or even more. [1] If a clinician follows the above conventional procedure after access cavity preparation, it is expected to caution the patient about the perils of any foreign object being lodged in the open canal. However, the clinician should always consider pros and cons associated with leaving the pulp chamber open for longer time [1].

In this case, the patient had open canal due to the fractured temporary restoration as he discontinued the treatment 3 years back. Foreign body can be obstacle for instrumentation leading to failure of endodontic treatment.[5] Foreign bodies in root canals can act as a focus of infection. A piece of jewellery chain placed into a maxillary central incisor resulted in Actinomycosis.[8] Hence, removal of foreign body is necessary. Foreign objects embedded inside the root canal can be either metallic or non-metallic. Only metallic objects are conspicuous in radiographs as they are radio-opaque. Specialized radiographic techniques such as Radiovisiography, three-dimensional CAT [Computerized axial tomography] scans can play a significant part in identifying foreign objects lodged inside the canal.[9,10] McAuliffe [11] outlined various radiographic techniques that has to be employed to find the radio-opaque foreign objects, such as parallax views, vertex occlusal views, triangulation techniques, stereo radiography, and tomography [3]. Specialized imaging procedures such as cone beam computed tomography [CBCT] can also be used in the identification. Non-metallic objects cannot be visualised on radiographs as they are radiolucent. So, one should take extensive history if we come across some resistance in an open canal either after trauma or during endodontic treatment. If one suspects some non-metallic objects inside the canal, attentive instrumentation is necessary to prevent the object from being thrust beyond the apex.[5] In this case, radiovisuography was used to take radiographs throughout the procedure. The metallic foreign object in this case is the fractured sewing needle fragment. In literature, there are many reports where sewing needles were fractured inside the root canal canals of maxillary and mandibular incisors in patients undergoing endodontic treatment. [12-16] In the present case, the patient used a sewing needle to relieve discomfort associated with the mandibular incisor. The sewing needle fractured within the middle third of the root canal and remained there. *Walvekar et al* [17] proposed that the foreign object should be loosened first by removing limited tooth structure to prevent perforation [1] In the present case, the instrument was bypassed by removing surrounding tooth structure. Extreme care should be taken to prevent the fracture of the instrument that is being used to remove the foreign object.[1] Various methods were suggested by authors for the foreign object's retrieval from the root canal [18,19], like use of ultrasonic instruments, the Masserann kit, modified Castroviejo needle holders and the use of operating microscope along with ultrasonic filing to eliminate intracanal metallic obstructions.[6] Here braiding technique was used to retrieve foreign instrument from the canal. Ethylene diamine tetra acetic acid is recommended in lubricating the root canal where foreign objects were embedded. [11,18] In this case, 17% EDTA was used for lubrication. Thus, the foreign body was successfully removed from the root canal. Then calcium hydroxide intracanal medicaments was placed for antimicrobial activity and obturation was done in the next appointment.

CONCLUSIONS

The presence of foreign body will always create complications as it acts as a focus of infection. Hence, the removal of those objects becomes mandatory. The location of the foreign body in the root canal will also play a vital role. Non-surgical orthograde retrieval of the foreign object with less amount of surrounding tooth structure removal will increase the success rate. The challenging situation can be overcome with the co-operation of the patient, extreme patience and the skill of the operator.

REFERENCES:

- [1]. RK Yadav, AP Tikku, A Chandra, C Rathinavel, V Shakya, R Bharti Endodontic Management of foreign body in the root canal: a case series Int J Sci Res Publ 2015; [5], 1- 3
- [2]. Lamster IB, Barenie JT. Foreign objects in the root canal: Review of literature and report of 2 cases. Oral Surg Oral Med Oral Pathol 1977; 44:483-6
- [3]. Prabhakar AR, Basappa N, Raju OS. Foreign body in a mandibular permanent molar: A case report. J Indian Soc Pedod Prev Dent 1998; 16:120-1.
- [4]. Nernst H. Foreign body in the root canal. Quintessenz 1972; 23:26.
- [5]. Chand K, Joesph S, Varughese JM, Nair MG, Prasanth S. Endodontic management of an unusual foreign body in a maxillary central incisor. J Conserv Dent 2013; 16:474-6
- [6]. Prabhakar AR, Saraswathi VN and Manjunath TG. Staple and Wooden Diet: Foreign Bodies in a Traumatized Tooth with Periapical Pathology. Austin J Dent. 2017; 4[2]: 1070
- [7]. Weine FS. Endodontic therapy. 6th ed. 2004
- [8]. Goldstein BH, Scuibba JJ, Laskin DM. Actinomycosis of the maxilla: A review of literature and a report case. J Oral Surg 1972; 30:362-6.
- [9]. Prabhakar AR, Namineni S, Subhadra HN. Foreign body in the apical portion of a root canal in a tooth with an immature apex: A case report. Int Endod J 2008; 41:920-7
- [10]. Kalyan SR, Sajjan G. Endodontic management of a foreign body. *Contemp Clin Dent*. 2010;1[3]:180-182.
- [11]. McAuliffe N, Drage NA, Hunter B. Staple diet: A foreign body in a tooth. Int J Paediatr Dent 2005; 15:468-71
- [12]. Patil P, Pimpale S, Mandwe A, Shetty H. Sewing Needle Obturation of Root Canal: A Rare Case Report. IJSS Case Reports & Reviews 2015;1[12]:31-35
- [13]. Uzun İ, Güler B and Özyürek T. Sewing needle in a root canal: a case report. Oral Biol Dent. 2014; 2:11
- [14]. Nadkarni UM, Munshi A, Damle SG, Kalaskar RR. Retrieval of a foreign object from the palatal root canal of a permanent maxillary first molar: A case report. Quintessence Int. 2002 Sep;33[8]:609-12
- [15]. Hasija, P.; Mathur, S.; Sandhu, M.; Sachdev, V. Sewing Needle in Root Canal: A Timely Diagnosis. Jodagh 2016, 8, 184-188.
- [16]. Thakur D. A sewing needle in tooth: Case report. Int Dent J Students Res 2020;8[3]:128-131.
- [17]. Walvekar SV, Al-Duwani Y, Al-Kandri AM, Al-Quoud AO. Unusual foreign objects from root canal. J Endod 1995; 21:526-7
- [18]. Hülsmann M. Methods for removing metal obstructions from the root canal. Endod Dent Traumatol 1993; 9:223-37
- [19]. Nehme WB. Elimination of intracanal metallic obstruction by abrasion using operational microscope and ultrasonics. J Endod 2001; 27:365-7.