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Case Report

Endodontic management of foreign body in root canal of 10 year child: a case report

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Abstract: Over the course of time, dentistry has evolved from a primitive form of dental care to modern day use of preventive treatment modalities. In today's modern dentistry with the availability of various new obturating materials, it was interesting to accidently diagnose the root canal being obturated with stainless steel wire. Here, we report a unique case where the root canal of a 10 year male patient was obturated with stainless steel wire following which the patient developed persistent pain and infection.
Keywords: Foreign body, trauma, root canal, stainless steel wire, endodontic management

INTRODUCTION

Foreign objects in the pulp chamber or root canals of deciduous and permanent teeth are a rare finding, but have been reported in the literature [1-7]. Grossman [8] reported retrieval of indelible ink pencil tips, brads, a toothpick, absorbent points and even tomato seed from the root canal of anterior teeth left open for drainage. The following case describes a foreign object impacted into the maxillary central incisor, which was retrieved by simple nonsurgical endodontic means without complications.

CASE REPORT

A 10 year old boy reported to the Department of Pedodontics and Preventive Dentistry, with a chief complaint of pain in upper left front tooth region since one week. Patient gave history of intermittent moderate pain in upper front tooth region since 1 month and severe pain since 1 week. The patient had history of trauma to his permanent left maxillary central incisor about a year back. Initially the patient did not have any pain, so he did not take any treatment. Patient had visited a dentist 7-8 months after trauma due to pain in relation to upper left front tooth. Root canal treatment was done by the dentist in the affected tooth. Since then, the patient had recurrent bouts of pain and moderate swelling that subsided after antibiotic treatment. Intraoral examination revealed a discolored left maxillary central incisor [Figure 1] with pain on percussion. No mobility was present. Entangled steel wire was noticed in the pulp chamber. Intraoral periapical radiograph revealed the presence of a linear radioopaque object in the root canal lodged in the root canal [Figure 2]. The formulated treatment plan included retrieval of foreign object followed by endodontic treatment. The pulp chamber was cleared of debris by copious irrigation with saline solution and retrieval of entangled wire was done by engaging the wire between ISO no. 20 H-file (DENTSPLY Maillefer) and canal wall then pulling it out coronally which was then grasped with tweezer. The retrieved foreign object appeared grayish black in colour measuring about 17mm [Figure 3]. The tooth was dressed with calcium hydroxide for 2 weeks followed by completion of conventional root canal treatment [Figure 4]. Following which the patient was given an acrylic crown and was advised to go for full crown restoration [Figure 5]. The patient was recalled for follow-up at 3 months, the tooth was asymptomatic and the healing was uneventful.

Fig-1: Pre-treatment image showing discoloured tooth 21

Fig-2: Intraoral periapical radiograph showing a linera radiopaque object in the root canal

Fig-3: Intraoral periapical radiograph showing obturated tooth

Fig-4: Retrieved stainless steel wire from the root canal

Fig-5: Acrylic crown given on 21

DISCUSSION

The discovery of foreign bodies in the teeth is a rare case, which is often diagnosed accidentally. Various objects have been reported to be lodged in the pulp chamber and root canal of teeth (Table 1) [1-7]. It is more common to find this situation in children as they have tendency of putting random objects in the mouth. Sometimes the foreign objects accidentally get stuck in the root canals of the teeth, which the children do not reveal to their parents due to fear

.

Table 1: Summary of various studies reported in dental literature

Authors	Foreign object	Age/sex	Treatment	Tooth number
Prabhakar AR[1]	Screw	13/M	Extraction	26
Holla G[2]	Metal wire	10/F	Extraction	53
Holla G[2]	Sewing needle	5/M	Extraction	51
Aduri R[3]	Stapler pin	12/F	Shepherd′s hook explorer	26
Aduri R[3]	Stapler Pin	10/M	Apicoectomy	21
PB Karia[4]	Ball end pin	12/M	Ultrasonic scaler	41
M Alrahabi[5]	Stapler Pin	12/M	H-File	21
Dhull KS[6]	Ball pin	8/F	Ultrasonic scaler	54 and 55
C Pinky[7]	Nails, Metallic pin	11/M	Saline and K-File	21

The case presented here is unique as the patient denied his role in inserting any object in the root canal, so the only possibility by which the wire could have got struck in the root canal was that the root canal was obturated with stainless steel wire by the dentist. Following the initial treatment the patient developed persistent pain and infection. Even after developing recurrent infection and pain, the patient was not advised for the retrieval of the metal wire by the local dentist, and antibiotic and analgesics were prescribed to him. Even after substitution of the antibiotic regimen when the patient's symptoms did not subside, he decided to visit the institution for a second opinion.

In such cases radiograph could be of diagnostic significance, especially if the foreign body is radioopaque. Retrieval of foreign objects could be easy if they are located within the pulp chamber, but once the object has been pushed apically their retrieval may be complicated [9].Although there is no specific technique to manage foreign object into root canals, the special techniques of retrieving separated endodontic instruments can be used to remove the foreign objects from the root canal [10]. These techniques include: ultrasonic, endodontic forceps, endodontic files, hollow tube-based extractor systems [11]. According to Walvekar *et al* [12], 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 and further complication.

The most important factor in retrieving foreign object and fracture instrument is the location of the fragment and its relationship with the curvature of the canal. When the fragment is positioned coronally to the curvature of the canal the possibility of removing the fragment increase on the other hand when the fragment is situated at or beyond the curvature of the canal the possibility of removing the fragment will be reduced or it will be impossible [13-15].

Foreign objects in the root canals can act as a focus of infection. Complications can follow if these impacted foci of infection are not eliminated at the right time. Actinomycosis following placement of piece of jewelry chain into a maxillary central incisor [16] and chronic maxillary sinusitis of dental origin developed due to pushing of foreign bodies into the maxillary sinus [17] Hence, extreme care should be taken not to push the object beyond the apex. Other complications associated with foreign body impaction in the pulp chamber are that they may act as obstructions for the smooth passage of endodontic instruments.

CONCLUSION

In the present case, foreign object lodged in the root canal was removed successfully by using a simple nonsurgical endodontic procedure. In today's era of modern dentistry, it was unusual to find a root canal obturated with stainless steel. Detailed case history, clinical and radiographic examinations are necessary to treat such cases. Careful instrumentation with patience is needed for retrieval of the foreign body. The utmost importance is to prevent further complications.

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