Non Surgical Retrieval of Lodged Foreign Body from the Root Canal

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Abstract : Trauma is a common cause of fractured teeth with exposed root canals in growing children. Children with fractured tooth may use foreign objects to explore the tooth. These objects may lodge within the root canal and become a potent source of infection. The success of retrieving foreign objects from the root canal system is influenced by different factors like technical support, anatomical factors and skills of the operator. This case series were done in Department of Conservative Dentistry and Endodontics, Sri Hasanamba Dental College and Hospital, describes the removal of foreign objects embedded in the root canal system using a simple non surgical procedure.

Key-words: foci of infection, foreign bodies, nonsurgical technique, retrieval, root canal treatment

Introduction

The chance of embedment of foreign body within the oral cavity is common, whereas the chances of a foreign body embedment within teeth are rare. The probability of foreign bodies being lodged within the tooth is more when the pulp chamber is open due to traumatic injuries, large carious lesion, during root canal procedures in which canals are left open for drainage or because of dislodged restorations. These foreign objects may be asymptomatic but often they become a potent source of pain and foci of infection to the patient. Appropriate diagnostic examination is required, to ascertain the size, shape, position, as well as composition of the foreign object. Retrieval of such foreign objects is always challenging and requires both skill and patience [1-3].

The following case series were done in Department of Conservative Dentistry and Endodontics, Sri Hasanamba Dental College and Hospital, describes the removal of foreign objects embedded in the root canal system using a simple non surgical procedure.

Case reports

Case report 1

A 14 year old boy reported with the chief complaint of swelling in the upper front tooth region since 3 weeks. The patient gave history of trauma due to fall from bicycle 8 months back and thereby fracturing his upper tooth. On detailed history taking, patient admitted of using pins regularly to remove food particles lodged within the fractured tooth. On intraoral examination patient was diagnosed with Ellis class III fracture in maxillary right central incisor associated with soft tissue swelling and mild pain on the labial aspect. Intraoral periapical radiograph revealed fracture of crown involving enamel, dentin and pulp with periapical radiolucency and a radiopaque object within the root canal extending from CEJ to root apex (see figure 1). The case was diagnosed as chronic periapical abscess. Treatment plan was formulated to retrieve the object followed by root canal therapy and prosthesis.

The tooth was isolated with rubber dam and a conventional access cavity was prepared. The tip of the foreign object was located and loosened with the help of a probe. The object was grasped with the help of a Stieglitz forceps and was retrieved slowly. On careful examination it was noticed that the retrieved object was a stapler pin of size 9mm (see figure 3). The root canal was irrigated with sodium hypochlorite and saline. The irrigants passed out the canal with a blackish color revealed that the metallic object was corroding. Retrieval of foreign body from the root canal was later confirmed with a radiograph (see figure 2). The tooth was dressed with non setting calcium hydroxide medicament. The endodontic procedure was completed in consecutive appointments followed by a fixed prosthesis.

Figure 1: Intraoral periapical radiograph of maxillary right central incisor revealing foreign objects
Case report 2

A 16 year old female patient reported with a chief complaint of swelling and pain in upper front tooth region since 1 week. The patient gave a history of self fall one year back. Intra oral examination revealed Ellis class III fracture involving both the maxillary central incisors, tenderness in the labial surface and a draining sinus on the attached gingiva in relation to maxillary left central incisor. Intra oral periapical radiograph revealed fracture of crown involving enamel, dentin and pulp with periapical radiolucency involving both the maxillary central incisors and a radiopaque object within the root canal of maxillary left central incisor extending from CEJ to the apical third (see figure 5). On further questioning, the patient admitted using various materials for removing food particles lodged within the fractured teeth. The case was diagnosed as an acute exacerbation of chronic periapical abscess. Treatment plan included retrieval of the foreign object followed by root canal treatment and prosthesis.

The tooth was isolated with rubber dam and a conventional access cavity was prepared. The tip of the foreign object was located with the help of an endodontic explorer. Retrieval was done by attempting to engage the foreign object using two ISO no: 20 H file along the root canal wall and then pulling it out coronally. Once the tip of the object was visible at the orifice, it was grasped with Stieglitz forceps and retrieved. The retrieved object was a metal wire of 7mm (see figure 7). Retrieval of foreign body in the root canal was later confirmed with radiograph (see figure 6). The tooth was dressed with non setting calcium hydroxide. The endodontic procedure was completed in consecutive appointments followed by fixed prosthesis.

Discussion

Young children always have the tendency to explore the oral cavity and teeth with foreign object. This habit can lead to ingestion of foreign object within the oral cavity and teeth which causes
persistent pain and infection. Foreign objects retrieved from the root canal system varies from radiolucent object like wooden toothpick, chopstick to radiopaque material like stapler pin, sewing needle, indelible ink pencil tip etc [5-10].

In the present case reports, stapler pin and metal wire has been retrieved from the root canal system. The metallic foreign body lodged inside the root canal may have corroded in the presence of tissue fluids. The corrosion byproducts can cause argyrosis and periradicular inflammation which have the potential to induce inflammatory root resorption [11].

The retrieval of foreign body from the root canal is often very difficult in many cases and only a success rate of 55% to 79% has been reported. As such there is no specific technique to remove the foreign objects from the root canal system. The techniques used for removing fractured endodontic instruments can be used to remove foreign objects from the root canal. These techniques include endodontic forceps, ultrasonic devices, the Masserann kit, endodontic files, hollow tube based extractor system [12-14] and [4].

The location and its relationship of the foreign object with the curvature of root canal is one of the important factors while retrieving the foreign object. If the foreign object is coronally positioned to the curvature of root canal, the probability of removing the foreign object increases. Whereas, if the foreign object is placed at or apical to the curvature of the canal, the probability of retrieval is reduced. In the present case series the foreign body was lodged within the maxillary central incisor with straight root canal, which made the retrieval of lodged foreign body easier [15].

Foreign objects lodged within the root canal system should be removed for successful outcome of the treatment. A thorough root canal irrigation protocol should be followed to completely remove the corrosion byproducts and remove the remnants of the foreign body. A non surgical attempt to retrieve the lodged foreign bodies is always given first preference over surgical management [16].

Conclusion

The success of retrieving foreign objects from the root canal system is influenced by different factors like technical support, anatomical factors and skills of the operator. In the present case reports foreign objects lodged in the root canal system where retrieved successfully by using non surgical procedure.

References


