

# **EGYPTIAN DENTAL JOURNAL**



Volume 48, Number 2, April 2002

Official Journal of the Egyptian Dental Association

## A RADIOPAQUE OBJECT IN THE PERIRADICULAR AREA

Hanan Balto\*

### ABSTRACT

A great variety of metallic objects broken by the dentist or even by the patients themselves have been discovered in root canals such as needles, pins, dressmakers pins, hat pins, amalgam and gold particles, spoon excavator tips, and more. This case report describes a clinical case in which a foreign object, inserted by the patient inside the canal, was removed by non-surgical approach. However, due to failure of apical closure with calcium hydroxide, surgical treatment was performed.

### INTRODUCTION

A great variety of metallic objects are introduced into root canals, some of these are inserted intentionally, for example silver cones and posts, and some are left in the root canal inadvertently, by the dentist or even by the patient, for example burs, fractured endodontic instruments, pins, and many other objects. Retrieval of these intracanal obstructions may be extremely difficult, but be essential for non-surgical treatment or retreatment.

No standardized procedure for successful removal of metallic objects even in difficult cases exists, although a number of different techniques and devices have been described in the literature (Hülsmann 1993).

This case report describes a non-surgical removal of foreign object inserted by the patient inside the root canal and extended beyond the wide-open apex.

### Case Presentation:

A 12 year-old female patient presented to the College of Dentistry at King Saud University,

Riyadh, complaining from intra-oral swelling in her upper left anterior tooth. At the initial appointment, clinical examination revealed class III fractures in tooth #21, with grade I mobility and fluctuant intra-oral swelling opposite the apex of the root with sinus tract. The access cavity on the palatal surface lacked coronal restoration and was blocked with food debris. The tooth was tender to percussion and palpation.

Patient reported that she fall down 3 years ago. One year later, a root canal treatment on tooth #21 was started, by general dentist, after which facial swelling developed and subsided by antibiotic coverage. During that time, the tooth was painful and sensitive to percussion. The preoperative radiograph showed a periradicular lesion surrounding an immature apex with the presence of what appeared to be straight pin in the periapical area, with the head of the pin at the apical third of the root canal (Fig. 1). During the same visit the vitality of the adjacent teeth was tested and tooth #21 was isolated with a rubber dam, and the access cavity was negotiated. Cotton pelt, small piece of toothpick,

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\* Lecturer Department of Restorative Dental Sciences, Division of Endodontics, College of Dentistry, King Saud University.



and food debris were removed from the pulp chamber. The pin was retrieved by a braiding technique (Fig. 2), then the canal was instrumented; irrigated with saline, filled with calcium hydroxide to promote apical closure and coronally sealed with Glass Ionomer.

The patient was examined clinically and radiographically after 6 months. The tooth was asymptomatic, the swelling and the sinus tract healed, but still had grade I mobility and the apex not yet closed. The root canal was irrigated and refilled with calcium hydroxide to be evaluated after another 6 months. During that time the patient disappeared and showed-up after two years complaining only from discoloration of the coronal restoration. Up to that time, the tooth was still asymptomatic. Clinical examination showed an evidence of leakage of the coronal restoration and the apex not yet closed. Calcium hydroxide reapplied and adequate coronal restoration was placed (Fig.3). Patient was recalled for almost one year, and up to that time, the apex was not closed completely, so periapical surgery was planned.

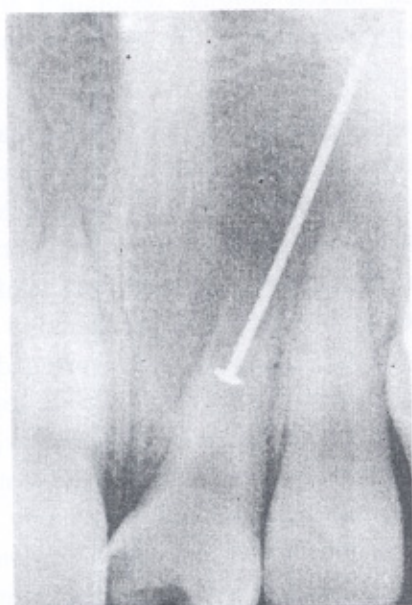


Fig. 1 : Pre-operative radiograph shows periapical lesion around the apex of tooth # 21. Note the pin extending beyond the apex of the root.

On the day of surgery, the patient was anesthetized and a full thickness mucoperiosteal flap with two release incisions (mesial to tooth #23, and distal to tooth #12) was reflected. On flap reflection, bear-shaped osseous defect was seen, about 5 mm apical to the crest of the alveolar bone. The granulation tissue was enucleated, the apical end of the root was smoothed with 169L tapered fissure bur under saline irrigation, and the root canal obturated, from orthograde approaches, with thermoplasticized gutta-percha obtura II (Obtura Corporation, Fenton, Mo) using AH26 "silver free" sealer (De Tray Dentsply, Milford, DE, USA). Gutta-percha was cold burnished with a ball burnisher at the apical end. The flap was sutured and the patient was given postoperative instructions. The patient came back after 5 days, suture was removed and the access cavity restored with permanent restoration.

Six-months after surgery, the healing was uneventful, the patient was completely asymptomatic and the radiograph showed a decrease in size of radiolucency around the apex of the root (Fig.4).

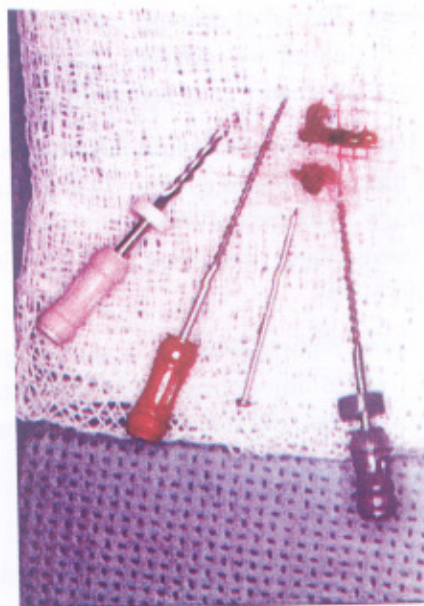


Fig. 2 : Foreign object (pin) removed from the canal using a braiding technique.



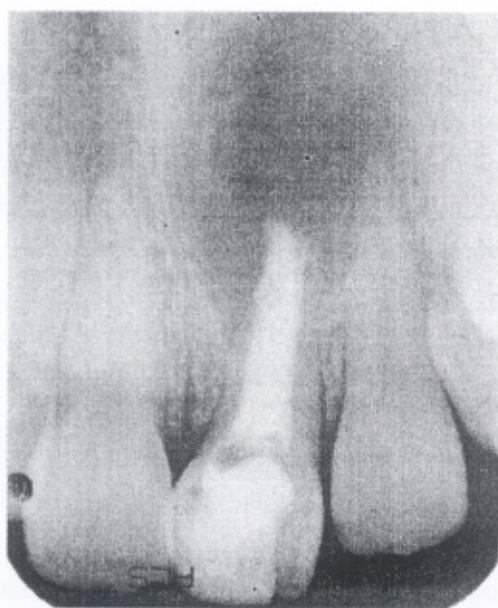


Fig. 3 : Radiograph taken after the application of the calcium hydroxide, when the patient showed-up after two years. Note the size of the periapical lesion.

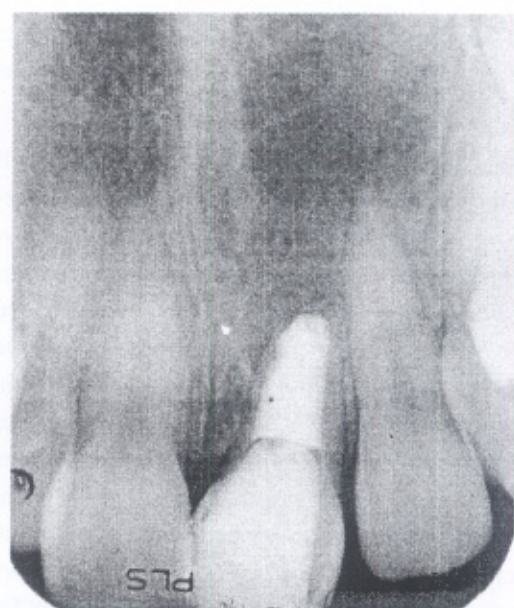


Fig. 4 : Six-month recall radiograph shows considerable osseous repair around the apex of the root.

## DISCUSSION:

Many objects have been reported to break or separate and subsequently become lodged in root canals. Glass beads from sterilizers, burs, Gates-Glidden drills, amalgam, lentulo paste fillers, files and reamers, and tip of dental instruments, have all found their way into canals, complicating treatment (Ingle 1994). Chenail and Teplitsky (1987) reviewed iatral and patient placed foreign objects and listed in addition to the above, nails, pencil leads, toothpicks, tomato seeds, hat pins, needles, pins and other metallic objects.

Fractures of endodontic instruments within root canal are one of the most troublesome incidents. Evaluation of endodontic recall radiographs indicates that the frequency of broken endodontic instrument ranges between 2 - 6 % of the cases investigated (Kerekcs & Tronstad 1979). Broken instruments usually prevent access to the apex, and the prognosis of teeth with broken instruments in the canals may be lower than for normal ones. The prognosis of these cases mainly depends on the preoperative condition of the periapical tissue (Crump & Natkin 1970).

There have been many reports on methods of

removing broken instruments in root canals. Methods using chemical agents such as iodine tri-chloride, mechanical methods such as hand instrumentation, ultrasonic devices, Masserann Kit or a canal finder system, and surgical methods have been used (Nagai et al. 1986, Hülsmann 1990). Although the removal of fractured instruments sometimes is a rather difficult and time consuming procedure, the success rate has been reported as 55% to 79% (Nagai et al. 1986). Technical equipment, however, should not be considered the only factor influencing success or failure of removal procedures. The skill and experience of the operator as well as the anatomical factors (root canal curvature, root canal diameter) may be even more important factors.

The procedures for the removal of such metallic obstructions, if placed by the patient inside the root canal, is similar to the techniques mentioned before. The procedure mainly depends on the form, the friction and the site, of the foreign body. In all cases, a careful examination with a fine endodontic instrument should be the first step. A gap between the metal object and the canal wall, which will exist in most cases, should be explored.

If it can be detected, then endodontic instruments are worked alongside the foreign body as deep as possible using heavy irrigation.

In this case when the patient was asked how it happened, she refused to admit anything, but during the follow-up visits she admitted that while trying to remove the food debris from inside the access cavity using metallic pin, it pushed accidentally deep inside the canal. Removal of the pin was accomplished by the braiding approach, popularized by Glick, in which three files inserted lateral to the pin in the canal space. These files were then twisted to engage the pin and then withdrawn slowly. Similar case was reported in which the foreign object removed surgically (Srivastava & Vineeta 2001). In this case the procedure was facilitated due to the wide-open apex with the presence of the pinhead at the apical third of the canal, which allows the files to go beyond the apical foramen and engage the pin at the middle. Failure to induce apical closure with calcium hydroxide, in the reported case, could be due to the large size of the apical lesion and inability to follow the case frequently. Leakage of the coronal restoration, during the disappearance of the patient, could be another reason leads to dissolution of the calcium hydroxide.

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