



MYSTERY OF FOREIGN BODY INSIDE TOOTH AND ITS MANAGEMENT

Rajendra Kumar Tewari	PROFESSOR, DEPARTMENT OF CONSERVATIVE DENTISTRY AND ENDODONTICS, DR ZIAUDDIN AHMAD DENTAL COLLEGE, AMU, ALIGARH, INDIA
Bhumika Kapoor	JUNIOR RESIDENT, DEPARTMENT OF CONSERVATIVE DENTISTRY AND ENDODONTICS, DR ZIAUDDIN AHMAD DENTAL COLLEGE, AMU, ALIGARH, INDIA
Surendra Kumar Mishra	PROFESSOR, DEPARTMENT OF CONSERVATIVE DENTISTRY AND ENDODONTICS, DR ZIAUDDIN AHMAD DENTAL COLLEGE, AMU, ALIGARH, INDIA
Ashok Kumar	PROFESSOR, DEPARTMENT OF CONSERVATIVE DENTISTRY AND ENDODONTICS, DR ZIAUDDIN AHMAD DENTAL COLLEGE, AMU, ALIGARH, INDIA

ABSTRACT

Foreign objects inside root canal possess a constant threat to the patient. Such objects can act as a foci of infection. Chances of impaction of foreign objects is more when chamber is left open due to caries, trauma or when the clinician leaves the tooth open for draining exudate. This case report describes a foreign body impaction in middle third of canal of maxillary central incisor with an immature apex. The foreign objects were retrieved from the canal by orthograde route. The tooth was also associated with large periapical pathology which was treated surgically.

KEYWORDS : foreign object , immature apex, periapical pathology

INTRODUCTION:

Foreign objects in a root canal is not a rare situation. Many patients usually seek dental treatment only when they have pain and swelling. In case of acute apical abscess with draining exudate, the dentist usually leaves the tooth open to establish proper drainage. This renders the patient to place foreign objects inside the tooth which may further get lodged into the root canal or sometimes beyond the apex.¹ Further, the oral bacteria and food particles get pushed into the tooth. The foreign object and the debris act as a source of further infection. Prolonged retention of foreign objects can lead to biofilm establishment with further formation of periapical abscess, granulomas and cysts.² In extreme cases, it can lead to cellulitis and osteomyelitis.³

Literature reports that various objects can be found inside the root canal which may include wooden pieces, needle, jewellery pieces, staple pins, chopsticks, paper clips, nails, beads, metal screws. Various techniques are used for retrieval of such objects like Masserann kit⁴, Modified Castroviejo needle holders⁵, Endo Extractor⁶, wire loop technique⁷, long-shank burs and ophthalmic needle-holders⁸, and ultrasonic devices⁹. However, when such objects extend beyond the apex or periapical pathology develops as a result of such bizarre situation then endodontic surgery remains last resort¹⁰.

This case report describes the retrieval of a foreign object in the middle third of canal of a maxillary central incisor with an immature apex, and the management of a cystic lesion, through periapical surgery.

CASE REPORT:

A 28 years old male patient reported in Dental OPD, of Dr Ziauddin Ahmad Dental College, AMU with the requirement of crown fabrication. He was referred to Department of Conservative Dentistry and Endodontics for management of the concerned tooth. The patient gave a history of trauma 10 to 15 years back after which he developed pain and swelling in upper front tooth region. He underwent an endodontic treatment for the same but did not continue his treatment after first visit. On examination, 21 was discolored and access cavity preparation was seen (figure 1a). Gingival defect was also seen with respect to 21. There were no

presenting signs and symptoms. The tooth was not tender to percussion and palpation. Bleeding on probing was appreciated from the gingival defect. Electric pup testing (Parkell Electronics Division, Farmingdale, NY, USA) was performed from canine to canine. 21 and 22 had no response while rest of teeth had normal response on EPT. On radiographic examination, tail end of needle was seen in middle third of canal and a large periapical radiolucency was seen with respect to 21 and 22 (figure 1b).



Fig 1. Preoperative (a) View (b) Radiograph

Tooth 21 also revealed an immature apex. The patient was informed of this foreign object in the canal after which he revealed that he used to place pointed objects in the tooth to drain out pus.

After taking the informed consent, treatment plan was made to retrieve the foreign object through orthograde route followed by periapical surgery for management of large lesion.

Rubber dam was applied and access cavity was refined with Endo Access bur [Dentsply Maillefer, Ballaigue, Switzerland] in 21 and an endodontic access was established in 22. H files [Dentsply Maillefer, Ballaigues, Switzerland] were used for canal preparation and retrieval of needle end in 21. Copious irrigation was performed with 5.25% sodium hypochlorite [Cmident, Cmident, New Delhi, India] and normal saline using side vented irrigation needle [RC Twents irrigation needle, Prime Dental Products Pvt. Ltd.]. Smear layer was removed using 17% EDTA solution [Sybron Endo, CA, USA]. Wooden twigs were retrieved from the canal of 21 (figure 2a). After constant filing and irrigation needle end was also retrieved (figure 2b). It was completely corroded and corrosion products with debris was removed from the canal.

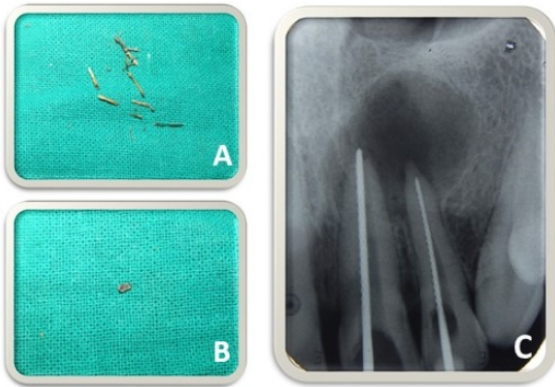


Fig 2.(a) Retrieved wooden twigs (b) Retrieved needle end (c) Working length radiograph

The working length of 21, 22 was established using radiograph (figure 2c). Canal was prepared using H files using circumferential filing in 21. Step back preparation was done in 22 using K hand files [Dentsply Maillefer, Ballaigues, Switzerland]. Final irrigation was done with 2% chlorhexidine (Sigma Chemicals, St. Louis, MO, USA) and calcium hydroxide [Ultradent Products Inc., USA] mixed with chlorhexidine dressing was given for 2 weeks. Access cavity was temporized with Cavit [3M ESPE Dental Products, St. Paul, MN, USA] and second visit of patient was planned for periapical surgery.

On the day of surgery, the concerned area was anesthetized with 1.8 ml of 2% Lignocaine containing 1:200,000 adrenaline [Xylocaine, AstraZeneca Pharma Ind Ltd., Bangalore, India]. Crevicular incision was given and affected area was exposed. Dehiscence was seen in relation to 21. The bone in relation to tooth No. 21 and 22 was removed with a round surgical bur (No. 8R, SS White Company, Dental Avenue India, Pvt. Ltd., Mumbai, India). Enucleation of the bony cavity was done and granulation tissue was completely removed from the cavity (figure 3a). After exposing the root ends of 21 and 22, apical 3mm root end resection was done. Copious irrigation with normal saline was done through 21 and 22 and canals were cleaned and dried. 22 was obturated by lateral condensation while the entire central incisor was obturated with MTA [MTA ProRoot, Dentsply, Tulsa, OK, USA] (figure 4a). Temporary restoration was given in both teeth. After final inspection of the bony cavity it was filled with perioglas bone graft [NovaBone Products Pvt. Ltd., India] and GTR membrane [PerioCol GTR, Eucare pharmaceuticals Pvt Ltd, Chennai] was placed over the bony crypt (figure 3b,c).

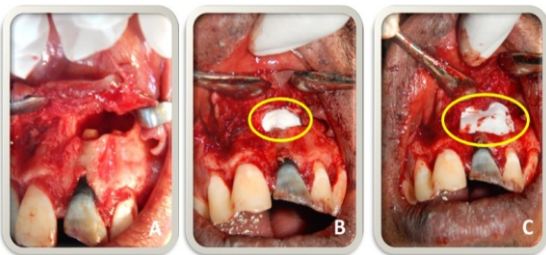


Fig. 3 (a) Preparation of bony window (b) Placement of graft (c) Placement of GTR membrane

The flap was placed again and sutures were given with 4-0 black silk suture [Ethicon / Johnson & Johnson, India]. The patient was given post operative instructions and recalled after 1 week for suture removal. The tissue was sent for histopathological examination through which a diagnosis of periapical cyst of made.

After removing suture, permanent restoration was given with composite Filtek Z 250 XT (3M ESPE, St. Paul, MN, USA). The patient was kept on 3, 6, 12 months follow up (figure 4b). The crown fabrication was prolonged due to gingival defect. After 1 year when

the defect was completely healed crown was fabricated (figure 4c,d)

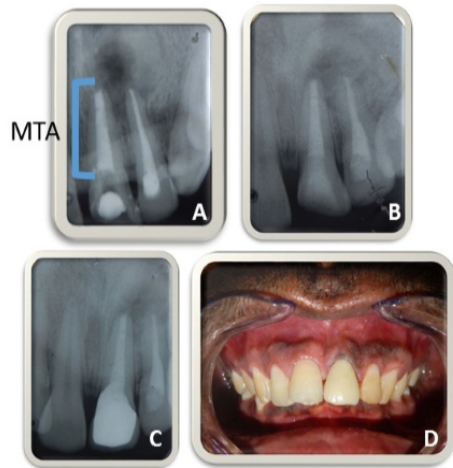


Fig 4.(a) Obturation (b) Follow up 1 year (c) Post endodontic restoration (d) Postoperative view

Patient was asymptomatic at recall visits and subsequent radiographs revealed periapical healing.

DISCUSSION:

Foreign objects when impacted inside the tooth can act as potent source of infection. In some cases when there is draining exudate, the dentist usually leaves the tooth open. This keeps the patient at risk of placing foreign objects inside the tooth. Apart from this risk, food particles, debris, oral bacteria also enter the tooth. This leads to further exacerbation of underlying disease. In the present case, patient placed needle and wooden pieces inside the tooth. The tail end of needle was radiopaque and was detectable on radiograph. The wooden twigs being radiolucent were not detected unless retrieved from the canal.

Calcium hydroxide powder mixed with chlorhexidine was given as intracanal medicament for maximum disinfection. MTA has a range of advantages such as biocompatibility¹¹, hard tissue formation, sealing ability¹², antibacterial property.¹³ It was used to obturate the entire canal because of few reasons. Interradicular biofilms are usually present in cases with long standing periapical lesions as in this case.¹⁴ Complete obturation with bioactive materials such as MTA have an advantage of cementum formation and antibacterial effect. GP sealer interface can harbor a tenacious gram positive bacteria and fungi. Such organisms have an ability to survive between GP/sealer and dentin.¹⁵ To prevent this bacterial leakage the material should adapt and adhere to dentinal walls.¹⁶ Interaction of calcium and phosphate ions forms apatite crystals at material dentin interface that prevents bacterial leakage in the set MTA.¹⁷

Perioglas is a bioactive ceramic/synthetic graft. It is composed of calcium sulfate, calcium phosphate, bioactive glass. It completely resorbs and regenerates bone in the defect and demonstrates excellent bonding to both bone and soft tissues. It has osteoconductive and osteostimulative properties. Resorbable collagen GTR membrane was used to cover the bony crypt. It was extended 2-3mm over the periphery of the bone and the edges were rounded. The tissue coverage was done carefully so as not to displace the membrane. The rationale using GTR membrane was to protect the wound from motile soft tissue cells and enhance repopulation of the defect with cells of osteogenic potential.

The objectives of the surgical approach were to remove the diseased tissue and maintain an effective apical barrier to provide an environment conducive of regeneration of a normal periodontal apparatus.

CONCLUSION:

The present report described the management of unusual foreign

bodies in the canal and large lesion in the periapex .It is incumbent for a clinician to avoid leaving the tooth open for a long time. Also, it is important to educate the patient of dangerous potential of placing foreign objects into the canal .

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