



A case of broomstick in the root canal extending beyond the apex causing epistaxis

*Adekoya-Sofowora CA **Nasir WO

*Department of Child Dental Health
Faculty of Dentistry, Obafemi Awolowo University,
Ile-Ife, Osun State, Nigeria.

**Dental Hospital, Obafemi Awolowo University, Ile-Ife, Nigeria.

*Correspondence: Adekoya-Sofowora CA
E-mail: casofowora@yahoo.com

Abstract

There have been several reports describing the placement, by patients of foreign objects in to the exposed pulp chambers and canals. Foreign objects inserted in the canal have varied from radiolucent objects like wooden tooth picks or tooth brush bristles to radiopaque materials like paper pins, needles and pencil leads. In this present case a 13 year old boy reported at the outpatient clinic of the Department of Preventive Dentistry, Obafemi Awolowo University, Ile-Ife with a 6 year history of trauma to the upper anterior teeth. There was bleeding from the nose, painful labial swelling, and discharging sinus around the maxillary right permanent central incisor for 4 days. A periapical radiograph did not show presence of a foreign object in root canal of the fractured discoloured right maxillary central incisor. The patient denied inserting any object in the canal. The tooth was extracted and a broomstick extending by 12mm beyond the apex of the tooth and bleeding from the nose was observed. A case of a unique foreign object in the pulp chamber projecting beyond the apical foramen and resulting in epistaxis is reported. The importance of early treatment of fractured teeth in children is stressed to prevent complications.

Key words: Broomstick, root canal, epistaxis.

Introduction

Traumatic injury to the teeth is a common event⁽¹⁻⁴⁾. In many western countries more than half of all children have experienced a traumatic dental injury before adulthood⁽⁵⁾. Early treatment of fractured teeth is important to avoid complications. Placement of foreign objects such as broomstick, match stick, pins, stones, beads, through the orifices in the body, such as ear, nose, mouth, while playing with these objects is a possibility in children. Placement of foreign objects in the pulp chamber and root canal have been reported⁽⁶⁻¹⁷⁾. Removal of foreign object from the pulp chamber and root canal is often a difficult procedure^(10, 12), require considerable time and effort⁽¹⁸⁾ and sometimes unsuccessful^(8, 9). Several techniques for removing foreign objects in the pulp chamber and root canal have been reported^(9, 19, 20, 21, 22, 23).

Tooth discolouration, arrest of root formation, dentoalveolar abscess, periapical cyst are complications that could arise from a fractured tooth, obliteration of the pulpal canal and pulp necrosis are frequent long-term complications of fractured teeth^(24, 25). Epistaxis as a complication of placement of foreign body in the pulp chamber and root canal of a fractured tooth with pulpal exposure has not been reported in the literature.

Case Report

A 13 year old boy accompanied by his mother and his church Pastor reported to the out patient clinic of

Department of Preventive Dentistry, Dental Hospital, Obafemi Awolowo University, Ile-Ife, Nigeria, complaining of recurrent pain from a fractured tooth and recurrent bleeding from the nose. He sustained injury to the teeth 6 years ago when he was 7 year old. He experienced continuous pain and swelling in the upper anterior area of the jaw for 4 days which was aggravated by eating food. The pain disturbed sleep at night. The swelling was associated with pus discharge and bleeding from the right nostril. On further questioning the patient's mother was aware of his son's recurrent painful swelling and bleeding from the nose. She had first noticed the problem 2 years before reporting for treatment. Unfortunately there was no dental consultation because the family was poor and cannot afford the cost of treatment. The patient denied ever placing an object in the root canal. There was no history of treatment from quacks and traditional medicine healers.

Apart from the history of self medication, using tetracycline for treating stomach ache during childhood the patient had no other relevant medical and dental history. There was no family history of bleeding disorder. Generally the patient was ill looking but was not febrile. Extraoral examination showed facial asymmetry. There was slight swelling of the upper lip and submandibular lymphadenopathy. There was pus discharge stained with blood and gentle bleeding from the floor of the right nostril. Intraorally, he had poor oral hygiene with heavy calculus on

teeth surfaces which made it difficult to discern the colour of the teeth. The patient had all the permanent teeth except the third molars. All the maxillary and mandibular permanent central, and lateral incisors and permanent canines had tetracycline stain. The maxillary right permanent central incisor was fractured with the pulp exposed and this was tender to percussion. There was soft labial swelling with discharging sinus related to the tooth. On palpation pus was expressed from the swelling and there was no pus discharge from the root canal. On probing the root canal an object was observed 1mm short of the opening of the canal. An attempt to pass a file through the canal revealed that the canal was obstructed. A provisional diagnosis of labial abscess, epistaxis and haemophilia was made. Further haematological investigation revealed no haematological disorder. Radiological investigation and pulp vitality test were carried out. A diagnosis of labial abscess related to a



Figure 1. Periapical x ray showing radiolucency related to fractured maxillary right incisor

fractured permanent maxillary right incisor complicated by epistaxis was made. Oral prophylaxis, root canal treatment of the permanent maxillary right central incisor was planned initially and the patient was informed. The patient could not afford the cost of endodontic treatment and the mother insisted on extraction of the tooth.

Periapical X-ray of the tooth showed patent root canal with a longitudinally extensive periapical radiolucency (Figure 1). The extracted tooth was found to contain a 32mm long broomstick in the pulp chamber and root canal. The broomstick overshoot the apical foramen by 12mm (Figure 2). Profuse bleeding from the extraction socket and mild bleeding from the right nostril were observed. Extraction socket was cleaned with bone curette and no broomstick fragment was retrieved. The socket was copiously irrigated with saline and saline discharge from the right nostril was observed. Patient was treated with antibiotics and analgesic and advised to rinse with warm saline many times daily. He was reviewed 3 days later and subsequent recall visit 1 week, 1 month and 6 months. The extraction socket and floor of the right nostril were observed to be healing satisfactorily and healing was uneventful. Post operative radiographs and photographs were recorded (Figures 3, 4). Partial denture was fabricated for the patient 3 months post operative (Figure 5). Upper occlusal radiograph after 6 months showed complete healing (Figure 6).

Discussion

In a recent study, Adekoya-Sofowora et al⁽⁴⁾ reported 23% crown fracture with pulpal involvement in Nigerian children. This showed that this type of fracture is common in this population. Crown fractures with pulpal exposure of the teeth with complete root formation are often treated endodontically, and an esthetic crown placed. The sooner this is done the better to avoid complications. Teeth with incompletely formed roots will be weakened significantly by early loss of radicular pulp hence effort should be made to maintain pulp vitality. Teeth without extensive previous injuries or restorations have pulps with excellent survival potential provided this can be protected from bacteria invasion. This can be accomplished by a vital pulp therapy procedure referred to as shallow pulpotomy or Cvek pulpotomy⁽²⁶⁾. The prognosis for teeth with crown fracture is good even when pulps are exposed⁽²⁷⁾. A non vital tooth

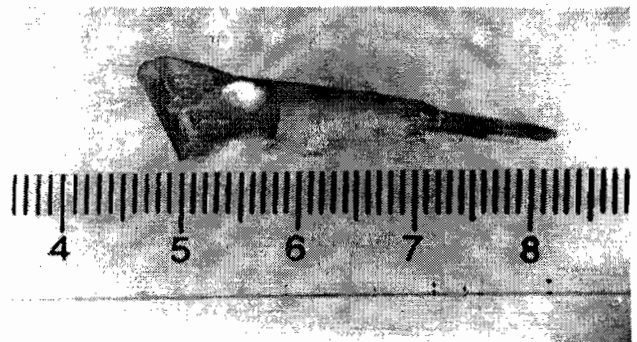


Figure 2. 32mm long broomstick in the pulp canal overshooting the apex of the extracted fractured right maxillary permanent central incisor.

with apical pathology and foreign body in the root canal can be successfully treated endodontically by retrieving the object in the canal⁽¹⁸⁻²³⁾ and apicectomy. The radiological findings in this report which revealed a patent root canal with a longitudinal extensive periapical radiolucency is of significance because of the presence of a radiolucent object in the canal protruding into the alveolar bone.

Anatomically, the floor of the nose is related to the oral structures. The anterior two thirds of the palate has a bony skeleton formed by the palatine processes of the maxillae and the horizontal plates of the palatine bones. Three foramina are open on the oral aspect of the hard palate: the incisive fossa, greater and lesser palatine foramina. The incisive fossa of the maxilla is a slight depression posterior to the central incisor teeth. The nasopalatine nerves pass from the nose through a variable number of incisive canals and foramina that open into the incisive fossa. A rich plexus of veins deep to the nasal mucosa drains into the sphenopalatine veins⁽²⁸⁾. Epistaxis is relatively common because of the rich blood supply to the nasal mucosa. In most cases the cause is trauma and bleeding is located in the anterior third of the nose (Kiesselbach's area). Epistaxis is also associated with hypertension and infections. Spurting of blood from the nose results from rupture of the arteries. Mild epistaxis often results from nose picking which tears veins in the vestibule of the nose⁽²⁸⁾.

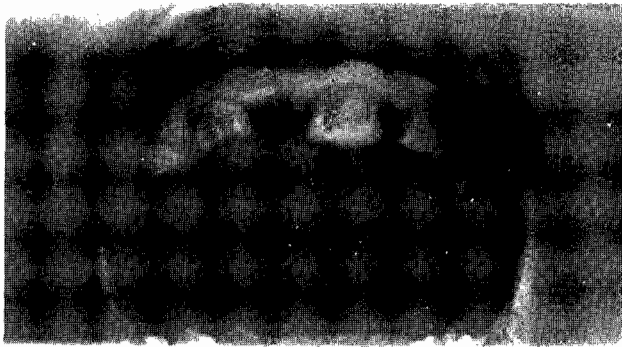


Figure 3. Postoperative photograph showing the healed extraction socket.

In this case treatment of the fractured tooth was delayed for over 6 years and the patient suffered pain, recurrent labial swelling and epistaxis. The traumatic dental injury occurred when the patient was 7 year old. The permanent central incisor normally erupts between the age of 6 and 7 years. The significance of age 7 years when this injury occurred was that the apex of the tooth was still opened because the tooth was still immature. The open apex facilitated the deep penetration into the alveolar bone and floor of the nose. This was why the canal could accommodate such a length of broomstick which overshot the apex by 12mm. This would have been prevented if the tooth was restored immediately after trauma. The delay in reporting for treatment due to financial reasons led to the infection and irritation from the exposed pulp and bone tissue resulting in inflammation, abscess formation, discharging sinus, epistaxis and pus discharge from the canal. This event might have prompted the patient to insert the broomstick in the pulp chamber and root canal to block it and prevent further discharge.

However, patient denied ever inserting an object in the pulp chamber and root canal. When the broomstick in the pulp chamber and root canal was ascertained the patient could not remember. This case is similar to two cases reported by Lamster and Barerine⁽¹⁵⁾ in which foreign object in a child's tooth was not the specific reason for seeking treatment. When the presence of the object was ascertained, neither parent could recall any mention being made by the child of introduction of foreign body. Broomstick is still commonly used in the villages in Nigeria as toothpick especially among the low income family and this explains why broomstick and not another foreign object was introduced into the fractured tooth. Children could easily forget what they have done especially when they are not in any discomfort or distress. In Nigeria, fear of being punished is the major reason why children do not report when they have done something wrong.

Conclusion

Fractured teeth can lead to complications if treatment is delayed as evident in this case. Epistaxis is a rare complication as a result of placement of foreign body in the pulp chamber and root canal of a fractured tooth as illustrated by this report. Attending the dentist is inevitable especially if the fractured tooth involves exposure of the pulp. Parents have an important role to play in the early treatment of children's oral problems. The finding of epistaxis, long standing fracture of an incisor tooth,

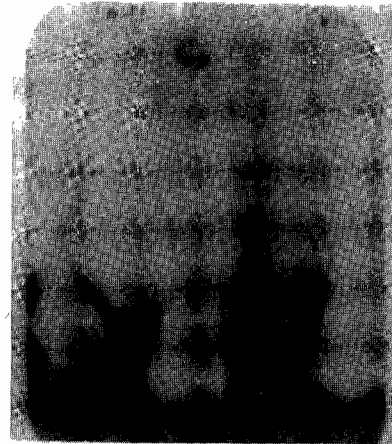


Figure 4
Postoperative periapical radiograph.

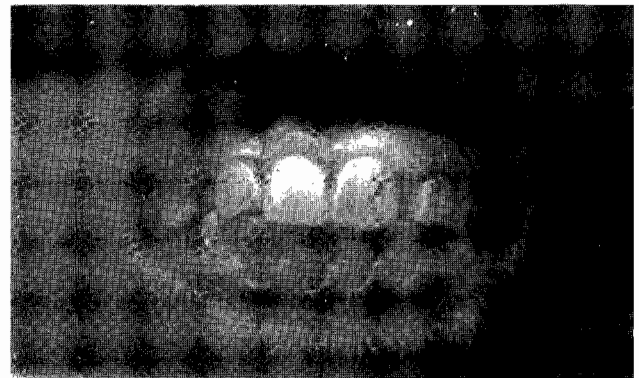


Figure 5. Partial denture replacing extracted right maxillary permanent central incisors.

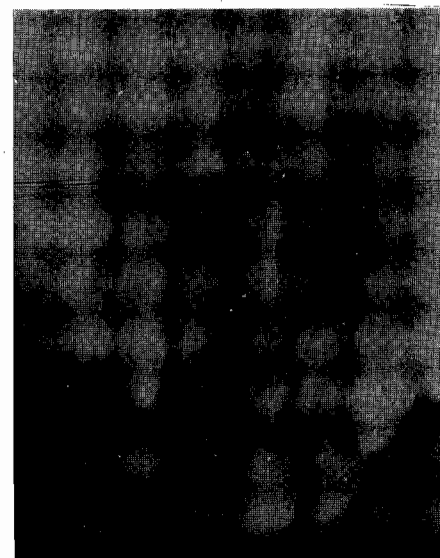


Figure 6. Upper occlusal radiograph of the patient (6 months postoperative).

radiographically patent root canal with longitudinal extensive periapical radiolucency could lead to a suspicion of root canal obstruction by a radiolucent object and retrieval should be attempted.



References

1. Marcenes W, Murray S. Changes in prevalence and treatment need for traumatic dental injuries among 14 year old children in Newham. London : a deprived area. *Comm Dent Health* 2002;19: 104- 108.
2. Blanco L, Cohen S. Treatment of crown fractures with exposed pulps. *J Calif Dent Assoc* 2002;30: 419 -425.
3. Otuyemi OD. Traumatic anterior dental injuries related to incisor overjet and lip competence in 12 year old Nigerian children. *Int J Paed Dent* 1994; 4: 81 -85.
4. Adekoya Sofowora CA, Sote E, Odusanya S, Fagade O. Traumatic dental injuries of anterior teeth of children in Ile-Ife, Nigeria. *Pediatr Dent J* 2000; 10: 33 -39.
5. Andreassen JO. Traumatic dental injuries in children. Invited editorial. *Int J Paed Dent* 2000; 10: 181.
6. Rao A, Sudha P. A case of stapler pin in the root canal extending beyond the apex. *Ind J Dent Res* 1999; 10: 104- 107.
7. Srivastava N, Vineeta N. Foreign body in the periradicular area. *J Endod* 2001;27: 593-594.
8. Prabhakar AR, Basappa N, Raju OS. Foreign body in a mandibular permanent molar. A case report. *J Ind Soc Pedod Prev Dent* 1998; 16: 120-121.
9. Cutinho Filho T, Krebs RL, Berlinck TC, Galindo RG. Retrieval of a broken endodontic instrument using cyanoacrylate to adhesive. A case report. *Braz Dent J* 1998;9: 57-60.
10. Walker SV, AL Duwairi Y, AL Kandari AM, AL Quoud OA. Unusual foreign objects in the root canal. *J Endod* 1995; 21: 526-527.
11. McCulloch AJ. The removal of restorations and foreign objects from root canals. *Quint Int* 1993; 24: 245-249.
12. Lumley PJ, Walmsley AD. Removal of foreign objects from the root canals. *Dent Update* 1990; 17: 420-243.
13. Shay JC. Foreign body in a tooth. *Oral Surg Oral Med Oral Pathol* 1985; 59: 431.
14. Turner CH. An unusual foreign body. *Oral Surg Oral Med Oral Pathol* 1983; 56: 226.
15. Lamster IB, Barenie JT. Foreign objects in the root canal. Review of the literature and report of two cases. *Oral Surg Oral Med Oral Pathol* 1997; 144: 483 -486.
16. Cotaldo E. Unusual foreign objects in pulp canals. *Oral Surg Oral Med Oral Pathol* 1976; 42: 851.
17. Harris WE. Foreign bodies in root canals, report of two cases. *J Am Dent Assoc* 1972; 85: 906-911.
18. Kleier DJ, Mendoza M. The use of tungsten carbide needle holder to remove intracanal objects. *J Endod* 1996; 22: 703 - 705.
19. D'Arcangelo C, Varvara G, De Fazio P. Broken instruments removal ; two cases. *J Endod* 2000 ;26: 368 -370.
20. Ruddle C. Microendodontics: eliminating intracanal obstructions. *Dent Today* 1996; 15: 44, 46, 48- 49.
21. Flanders DH. New techniques for removing separated root canal instruments. *N Y State Dent J* 1996; 62: 30-32.
22. Wang XY, Wang ZM, Hong J. Removal of intracanal obstruction with ultrasound. Analysis of 206 cases. *Chin Med J* 1994; 107: 474 - 477.
23. Hulsman N. Removal of fractured instruments using a combined automated/ultrasonic technique. *J Endod* 1994; 20: 144 - 147.
24. Ravn JJ. Follow-up study of permanent incisors with enamel fractures a result of an acute trauma. *Scand J Dent Res* 1981 ; 89: 213- 217.
25. Ravn JJ. Follow-up study of permanent incisors with complicated crown fractures after acute trauma *Scandinavian J of Dent Res* 1982; 90: 363 -372.
26. DiAngelis AJ, Bakland LK. Traumatic dental injuries : Current treatment Concepts. *J Am Dent Ass on CD ROM* 1998; 1401 - 1414.
27. Cvek MA. A clinical report on partial pulpotomy and capping with calcium hydroxide in permanent incisors with complicated crown fracture. *J Endod* 1978; 4: 232 -238.
28. Keith L Moore, Arthur FD. *Clinically Oriented Anatomy*, 4th Edition. Lippincott Williams & Wilkins 1999, 935 - 957.