

A noteworthy case of extruded endodontic filling material

AUTHORS: JIGAR PURANI¹, HIRAL PURANI², HIREN PATEL³, SONAM RAMBHIA⁴

Abstract:

This case report describes the clinical manifestations and treatment of an iatrogenic expulsion of endodontic filling material in periradicular region of permanent maxillary right central incisor.

This presentation recommends to observe meticulous care during execution of nonsurgical root canal treatment and proper usage of endodontic techniques.

Key Words: expulsion, apicectomy, periapical region, endodontic surgery

Introduction:

The presence of foreign body in the periapical region of tooth involves the possibility of habit of putting an object into mouth especially in children¹ or food compaction with large open pulp chambers or iatrogenic accidental extrusion of filling material during endodontic treatment by dentist.^{2,3,4} Surgical intervention is mandatory if there is an extrusion of non resorbable material which harms the periapical tissues. This case describes an extrusion of root canal filling material and its endodontic surgical management.

Case Presentation:

A 45 year old female patient came to our clinic with complaint of mild pain in upper front teeth since 2 months. On general examination, the patient was well built, well-nourished with good general health. Patient gave history of trauma to upper front teeth 8 months back and she had undergone for the treatment of the same with other dentist at that time. Extraorally, there was no remarkable finding. On intraoral examination, there was presence of full cast ceramic bridge in permanent maxillary right central and lateral incisors and canine (Figure 1,2). There was presence of pain on labial side in apical region of permanent right maxillary central and lateral incisor on pressure, while tenderness on percussion was not present in the same teeth. There were no signs of pus discharge, sinus formation or mobility of the affected teeth. There was a presence of nodule like structure near mucogingival junction on labial side in relation to permanent maxillary right central incisor which was hard and tender on palpation (Figure 1).



Figure 1 - Preoperative clinical photograph showing a bulge near apical region of permanent maxillary right central incisor and presence of porcelain fused to metal bridge from labial side



Figure 2 - Preoperative clinical photograph from palatal side
Radiographic examination revealed that permanent right maxillary central and lateral incisors and canine were already treated endodontically with root canal filling. There was a presence of periapical radiolucency in relation to permanent maxillary right central and lateral incisors with overfilling of root canal material in right lateral incisor. Apart from all these features, there was a presence of radiopaque material of almost apical one third of the size near the apex of permanent maxillary right central incisor (Figure 3,4).

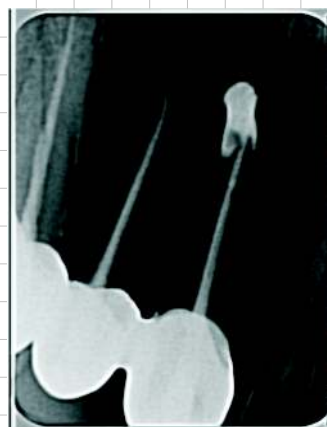


Figure 3 - Preoperative radiograph showing radiopaque foreign material near the apex of permanent maxillary right central incisor and overfilled gutta percha in right lateral incisor

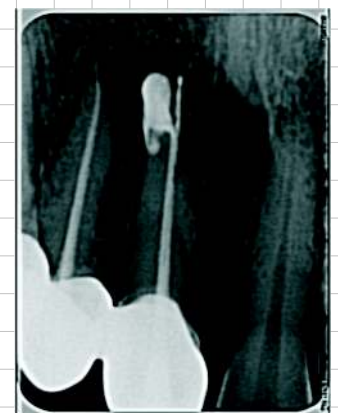


Figure 4 - Preoperative radiograph showing radiopaque foreign material near the apex of permanent maxillary right central incisor and overfilled gutta percha in right lateral incisor

As patient had history of trauma, there were chances of inclusion of foreign particles at the time of injury due to laceration of soft tissue. But patient didn't give history of laceration of soft tissue and if any material was intruded during trauma, the previous dentist must have removed that during endodontic and prosthetic treatment. So the patient's history of previous endodontic treatment, clinical features and radiographic examination suggested presence of foreign body material near the apex of permanent maxillary right central incisor must be an extrusion of endodontic filling material.

Gingival flap in relation to permanent maxillary right central and lateral incisors was raised surgically. On reflection of flap, evident extruded endodontic filling material was found at the apex of permanent right maxillary central incisor which was white in colour and firm in consistency. (Figure 8,9).



Figure 5 - Extruded endodontic filling material in relation to apex of permanent right maxillary central incisor



Figure 6 - Removal of extruded endodontic filling

The extruded material was removed (Figure 7) and apicectomy of both right incisors was performed with removal of granulation tissue and overfilled guttapercha in right lateral incisor (Figure 5,10) followed by retrograde filling. Sutures were taken to close the area (Figure 6) and oral hygiene care was advised.



Figure 7 - Specimen of extruded endodontic filling material



Figure 8 - Apicectomy procedure

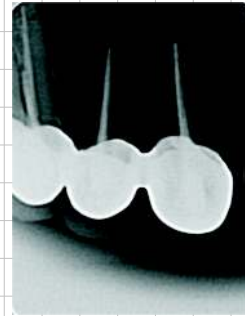


Figure 9 - Radiograph during surgery



Figure 10 - Sutures in place

On follow-up after 7 days and one month, healing was uneventful and there was no complaint of pain on palpation in the affected region (Figure 11). Tenderness on vertical or horizontal percussion of permanent maxillary right central and lateral incisors was absent as well.



Figure 11 - Postoperative clinical photograph - After one month

Discussion:

Incomplete formation of apical portion of root, root resorption at apex due to periradicular inflammation or over instrumentation beyond the apex during endodontic procedure may lead to an extrusion of filling material as a result of unavailable apical stop. The expulsion of foreign materials in periradicular areas leads to an inflammatory reaction or foreign body reaction and finally ends up in treatment failure.^{5,6,7,8} In addition to that, it can have detrimental effects on neighbouring structures.^{9,10} But many studies witnessed that overfilling or extrusion of filling material may not contribute to failure of therapy ^{5,11,12,13,14,15} as the response of periapical region to endodontic filling material rely upon the interplay between the property of substance and host immune response. In this case, the extruded filling material was settled in mucoperiosteum after perforating the cortical bone which was also found by Ektefaie MR et al in previously endodontically treated left maxillary first molar.⁴ Yaltirik M and his colleagues treated a female patient who was suffering from headache and chronic orbital pain due to overfilling right maxillary second premolar followed by extrusion in maxillary sinus.¹⁰ Tahan E and his colleagues have reported no detrimental effect of unintentionally extruded MTA into periradicular region of maxillary left central incisor.¹¹ Nitzan DW and his colleagues observed resolution of pain and other symptoms with only antibiotics and analgesics without surgical intervention in seven cases of accidental overfilling and overinstrumentation in the mandibular canal during root canal treatment except one case in which apicectomy was performed.¹⁶ In presented case, administration of antibiotics and analgesics remained unsuccessful to eradicate the condition, so surgical intervention was preferred and that helped the patient a lot to get rid of the complaints. Surgical endodontic treatment helps to resolve the signs and symptoms caused by extrusion of material in periradicular region.^{2,4,10} Here, we recommend to use endodontic instruments and materials with appropriate techniques in nonsurgical root canal treatment meticulously.

Conclusion:

Extruded endodontic filling material can cause pain in periapical lesion. To avoid extrusion of filling material outside root canal, radiograph should be taken during treatment. During the endodontic treatment of a tooth, the use of endodontic apex locator along with a radiograph with files in the canal to determine the working length will prevent over instrumentation and so restrict the undue damage caused by subsequent procedures. Surgical intervention is necessary if endodontic filling material is extruded in or near apical region.

References:

1. Srivastava N, Vineeta N. Foreign body in periradicular area. *J Endod* 2001;27(9):593-594.
2. Plascencia H, Cruz A, Solis R, Diaz M, Vazquez J. Iatrogenic displacement of a foreign body into the periapical tissues. *Case Rep Dent* 2014.
3. Santoro V, Lozito P, Donno AD. Extrusion of endodontic filling materials: medico-legal aspects. Two cases. *Open Dent J* 2009;3:68-73.
4. Ektefaie MR, David HT, Poh CF. Surgical resolution of chronic tissue irritation caused by extruded endodontic filling material. *J Can Dent Assoc* 2005;71(7):487-490.
5. Lin LM, Rosenberg PA, Lin J. Do procedural errors cause endodontic treatment failure? *J Am Dent Assoc* 2005;136(2):187-193.
6. Yusuf H. The significance of presence of foreign material periapically as a cause of failure of root treatment. *Oral Surg Oral Med Oral Pathol* 1982;54(5):566-574.
7. Koppang HS, Koppang R, Solheim T, Aarnes H, Stolen SO. Cellulose fibers from endodontic paper points as etiologic factor in postendodontic periapical granulomas and cysts. *J Endod* 1989;15(8):369-372.
8. Nair PNR, Sjogren U, Krey G, Sundqvist G. Therapy-resistant foreign body giant cell granuloma at the periapex of a root-filled human tooth. *J Endod* 1990;16(12):589-595.
9. Gonzalez-Martin M, Torres-Lagares D, Gutierrez-Perez JL, Segura-Egea JJ. Inferior alveolar nerve paraesthesia after overfilling of endodontic sealer into the mandibular canal. *J Endod* 2010;36(8):1419-1421.
10. Yaltirik M, Berberoglu HK, Koray M, Dulger O, Yildirim S, Aydil BA. Orbital pain and headache secondary to overfilling of a root canal. *J Endod* 2003;29(11):771-772.
11. Tahan E, Celik D, KursatEr, Tasdemir T. Effect of unintentionally extruded mineral trioxide aggregate in treatment of tooth with periradicular lesion: A case report. *J Endod* 2010;36(4):760-763.
12. Sjogren U, Hagglund B, Sundqvist G, Wing K. Factors affecting the long-term results of endodontic treatment. *J Endod* 1990;16(10):498-504.
13. Bergenholtz G, Lekholm U, Milthorpe R, Heden G, Odesjo B, Engstrom B. Retreatment of endodontic fillings. *Scand J Dent Res* 1979;87(3):217-224.
14. Halse A, Molven O. Overextended gutta-percha and Kloroperka N-O root canal fillings: Radiographic findings after 10-17 years. *Acta Odontol Scand* 1987;45(3):171-177.
15. Pascon EA, Leonardo MR, Safavi K, Langeland K. Tissue reaction to endodontic materials: methods, criteria, assessment and observations. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1991;72(2):222-237.
16. Nitzan DW, Stabholz A, Azaz B. Concepts of accidental overfilling and over instrumentation in the mandibular canal during root canal treatment. *J Endod* 1983;9(2):81-85.

PARTICULARS OF CONTRIBUTORS :

- 1) Associate Professor, Department of Oral Pathology, FDS, DDU
- 2) Assistant professor, Department of Periodontics, FDS, DDU
- 3) Professor and Head, Department of Oral Surgery, FDS, DDU
- 4) Associate Dentist, Saumya Dental Clinic

ADDRESS FOR CORRESPONDENCE:

Dr. Jigar M. Purani
18, Nagoripark Society,
Near Bhaduatnagar, Isanpur Road,
Ahmedabad – 380050. Ph: +91 98795 81630

Source of Support : NIL
Conflict of Interest : NOT DECLARED
Date of Submission : 10-01-2015
Review Completed : 10-04-2015