

TREATMENT OF PERFORATED CANALS – A CASE REPORT

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Abstract

In endodontic practice procedural accidents are encountered that will affect the prognosis of root canal treatment. One of these procedural accidents is endodontic perforation. If a perforation occurs, the tooth does not necessarily require surgery, intentional replantation, or extraction; in fact, it can be treated successfully in a conservative manner and continue to function as it did before the perforation. This article describes a successful management of a cervical perforation that occurred during routine endodontic therapy.

Prevention is the most important factor to avoid accidents during endodontic therapy. Benefits are always for the patient, who must receive the best possible treatment. The clinician must be particularly concerned about avoiding perforations of the tooth during endodontic therapy, since a perforation will necessitate additional treatment.

Key words: Endodontic therapy, Perforated Canals, RCT.

Introduction

In endodontic practice procedural accidents are encountered that will affect the prognosis of root canal treatment. One of these procedural accidents is endodontic perforation.¹ The clinician must be particularly concerned about avoiding perforations of the tooth during endodontic therapy, since a perforation will necessitate additional treatment. If a perforation occurs, the tooth does not necessarily require surgery, intentional replantation, or extraction; in fact, it can be treated successfully in a conservative manner and continue to function as it did before the perforation.²

Following perforation, an inflammatory reaction is set up in the surrounding periodontium of the affected site. This is due to mechanical trauma and microbial infiltration. Once identified the perforation should be sealed as soon as possible, otherwise irreversible periodontal damage may result. Today, there is no reason to believe that the tooth will be lost prematurely because of this complication.¹

This article describes a successful management of a cervical perforation that occurred during routine endodontic therapy.

Case Report

A 32 year male patient reported with the chief complaint of pain and fracture of his upper left back tooth region. He gave a history of pain in relation to the tooth since 1 month and accumulation of food in the distal side. Pain aggravated on drinking cold water. Pain was intermittent in nature, lasting for about 7 to 12 mins and then disappeared on removal of stimulus but aggravated during night. The patient did not give any relevant medical history. Patient had last visited a dentist 2 yrs back for root canal treatment of his upper front teeth. Extra-oral and intra-oral examination did not reveal any swelling. On local examination wrt 25, the tooth appeared to have deep dentinal caries on the distal side. The tooth was sensitive to cold water and tenderness on percussion was present. Tooth appeared to be firm and exhibited no mobility.

Radiographic examination revealed deep caries involving the pulp wrt 25. Widening of PDL space was seen in the apical area of 25. [Figure 1]



Figure 1: Deep caries involving the pulp with respect to 25.

The tooth did not respond to vitality testing. A provisional diagnosis of symptomatic apical periodontitis wrt 25 was made.

During endodontic access opening a cervical perforation resulted on the mesial side due to misdirection of the bur. [Figure 2]

Tooth was isolated, bleeding was controlled and disinfection was brought about using chlorhexidine. The canal was dried gently using hemostatic agents, following which GIC was placed over the perforated site and condensed along the adjacent wall. [Figure 3] After this routine root canal treatment was done.

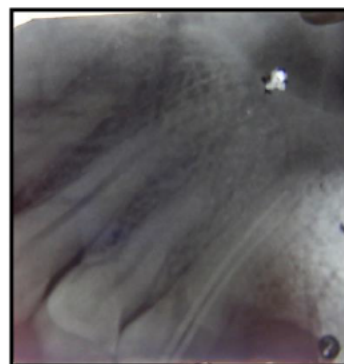


Figure 2: Cervical perforation on the mesial side due to misdirection of the bur.



Figure 3: Post operative Image.

Discussion

Iatrogenic errors are generally not encountered in routine endodontic practice but definitely pose embarrassing situation to the clinician. They may occur during endodontic procedures like:

- Access cavity preparation
- Cleaning and shaping of root canal system
- Post placement

Perforation during access preparation is a common type of error. A perforation is a mechanical or pathologic communication between root canal system and the external tooth surface.³ Prognosis of perforated teeth is associated with three factors: size, location and time elapsed from occurrence to repair. The prognosis is poor for larger more crestal older perforations.³ Beavers et al have demonstrated that if the lesions heal in association with a biocompatible material and especially in the absence of bacterial contamination, complete healing of the defect may occur following perforation.⁴ Cervical perforation can occur as a result of a number of causes like misdirection of bur, inappropriate use of Gates Glidden Drill deep in the canal or during location of canal orifice.⁵

In the case presented the perforation was supracrestal and wound contamination was prevented. The use of a biocompatible material like GIC, which provides good adhesion, was able to seal the defect immediately.

Regardless of the materials used, clinicians who seek to repair perforations have always had two challenges. The first challenge is to establish hemostasis and avoid overfilling, which can be accomplished by placing a barrier that conforms to the furcal or root surface. The barriers that are currently employed are CollaCote (Integra Life Sciences), freeze-dried bone, tricalcium phosphate and calcium phosphate. The second challenge is to select a restorative material that is easy to use, seals well, does not resorb, is aesthetically pleasing, biocompatible and supports new tissue formation. The materials commonly used include zinc-oxide eugenol, SuperEBA cement, glass ionomer cement, composite resin and mineral trioxide aggregate or MTA.⁴ Usually MTA is the material of choice for perforation repair. This is because MTA is hydrophilic and therefore resistant to moisture. Thus it has excellent

sealing properties and together with its antibacterial activity and biocompatibility MTA is the perfect material for treating a perforation defect. However we used GIC as there was no contamination and had a favourable environment for its setting. Glass ionomer cement a hybrid of silicate and zinc polycarboxylate, was introduced by Wilson and Kent in 1970s. It has various advantages like chemical adhesion to tooth structure, excellent biocompatibility and anti-cariogenicity.² With the advent of light cured GIC, which is, less sensitive to moisture, conventional GIC may be replaced by this material to seal perforations.

Conclusion

Perforation is an iatrogenic error that should primarily be avoided by proper care during access preparation. But in case of an untoward circumstance, the perforation should be identified as early as possible and treated non-surgically. In cases, which extend subgingivally, surgical correction will be required. In the present case due to absence of any inherent complication, non-surgical approach was the treatment of choice. Prevention is the most important factor to avoid accidents during endodontic therapy. Benefits are always for the patient, who must receive the best possible treatment.

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