

Management of Apical Periododontitis in the Mandibular Premolar with Root Perforation using Biodentine: A Case Report

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Abstract

Managing endodontically treated teeth with periodontal lesions could be difficult task, especially if case has its own complications, such as perforations. Sometimes, if the patient is cooperative, huge periodontal lesions could be treated and the teeth could be saved. The aim of this case report is to present endodontic retreatment of tooth with root perforation and wide-spread periodontal lesion.

Keywords: Apical Periodontitis, Root Perforation, Biodentine

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Date of Acceptance: 20/07/2023

Introduction

Managing endodontically treated teeth with huge periodontal lesions could be difficult task, especially if case has its own complications, such as perforations. If the patient is desperate for saving the tooth, even though the outcome of the tooth stays unclear, cooperation of the patient is very important. [1, 2] The aim of this case report is to present endodontic retreatment of tooth with root perforation and wide-spread periodontal lesion.

Case Report

A 25-year-old female patient was referred to the endodontist to the Department of Dental and Oral Pathology of LUHS Kaunas Clinics for left side mandibular second premolar endodontic retreatment. Patient complained that hard bump in the mucosa was present near tooth, endodontic treatment was performed about fifteen years ago. Upon clinical examination, the

tooth displayed composite restoration, no tenderness to vertical / lateral percussion or palpation. The examined area demonstrated no fistulas, but hard bump in the mucosa on the projection of the apex. Periodontal probing was normal around the tooth. Digital intra-oral radiography revealed incomplete root canal treatment, with evidence of perforation of distal wall. A well-defined radiolucency surrounding the apex of the tooth was also observed. (Fig. 1)

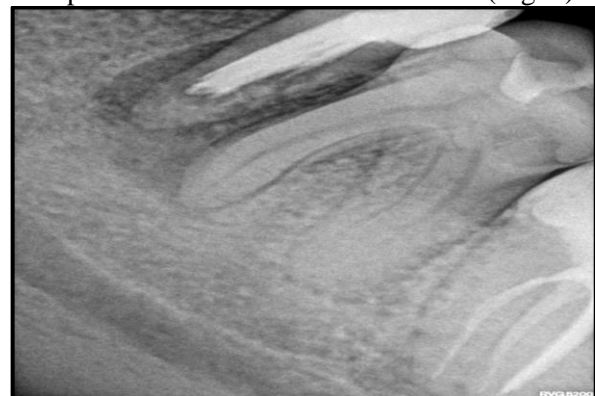


Fig. 1 Preoperative periapical radiograph of left side mandibular second premolar

The treatment plan was discussed and consisted of endodontic retreatment, filling of the perforation with bioceramics, restoration of the tooth and follow up appointments. During the first appointment, the tooth was accessed under dental dam isolation. Magnification by means of a dental operating microscope (OPMI pico, Carl Zeiss, Germany) was used for all clinical procedures. The majority of existing gutta percha and sealer were removed. The perforation in the distal wall was found, but the working length of the canal could not be reached because of the granulation tissue found in the canal. Canal was filled with $\text{Ca}(\text{OH})_2$, cavity restored with temporary filling. During the second appointment, the tooth was re-accessed under dental dam isolation. Canal shaping was performed using rotary Protaper Gold (Dentsply Sirona, USA) instruments as the working length was determined. Canal was filled with $\text{Ca}(\text{OH})_2$, cavity restored with temporary filling. During the third appointment, patient reported that the hard bump was missing. The examined area demonstrated no fistulas, no hard bump in the mucosa. The tooth was re-accessed under dental dam isolation. The intra-canal medication was removed. The final rinse protocol included 2.5% sodium hypochlorite and 17% EDTA. The perforation and the canal were filled with Biodentine (Septodont, France). (Fig. 2) Cavity was restored with temporary filling.

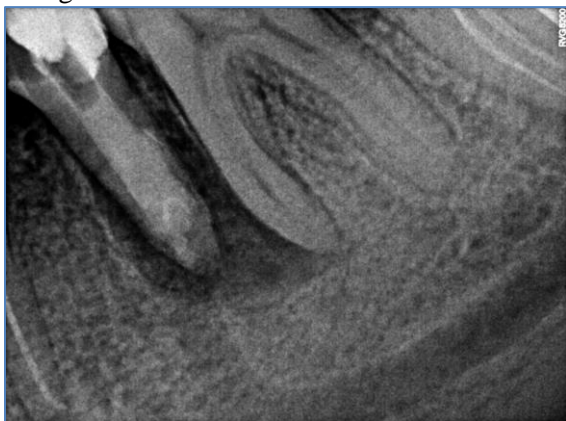


Fig. 2 Postoperative periapical radiograph of left side mandibular second premolar

At the follow up appointment after 4 and 9 months after the treatment the tooth was restored with composite filling. The examined area demonstrated no fistulas, no hard bump in the mucosa, no periodontal pockets. The cold

test of left side mandibular first molar was performed – the tooth responded normally. Digital intra-oral radiography revealed very slight healing of periodontal bone. (Fig 3, 4). Patient had no complaints.

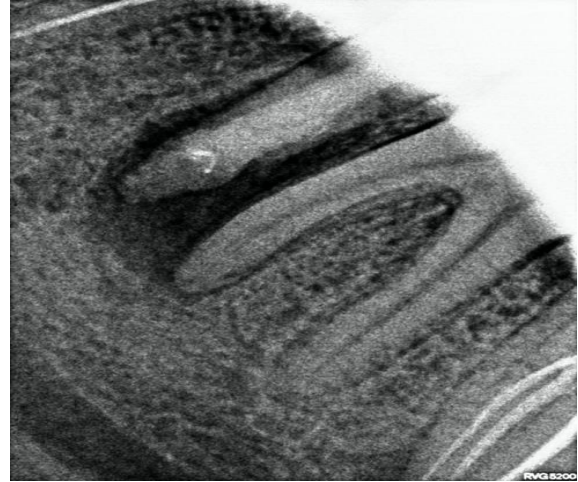


Fig. 3 Postoperative periapical radiograph of left side mandibular second premolar after 4 months



Fig. 4 Postoperative periapical radiograph of left side mandibular second premolar after 9 months
At the follow up appointment after 12 months after the treatment the examined area demonstrated no fistulas, no hard bump in the mucosa, no periodontal pockets. The cold test of of left side mandibular first molar was performed – the tooth responded normally. Digital intra-oral radiography revealed non-complete healing of periodontal bone. (Fig. 5). Patient had no complaints.



Fig. 5 Postoperative periapical radiograph of left side mandibular second premolar after 12 months

Discussion

As the patient mentioned that the initial treatment of the tooth was performed 15 years ago, depending on the age of the patient at the time (10 years), it can be suggested that during the initial treatment the root of the tooth was not completely formed. These days, bioceramic materials such as MTA or Biodentine are used for apexification. [3, 4, 5] As the canal during initial treatment was filled with gutta percha, it may not fill the area properly, so the apical lesion developed. All the infected gutta percha was removed and after the shaping and cleaning the canal, it was filled with Biodentine. The perforation was also filled with Biodentine. This material was chosen because of its biocompatibility, short setting time and easy application. In addition, it is significantly proven that Biodentine has less effect on changing the tooth color, as does MTA, because of containing bismute dioxide. Some authors suggest that Biodentine has potential on discoloration of the tooth when in contact with direct blood, but it still has less effect on discoloration than MTA. [6, 7] Even though intra-oral radiography revealed non-complete healing of periodontal bone after 12 months of the treatment, the patient has no complaints, so the case is considered to be successful. The case still needs to be followed.

Conclusion

Filling the canal and the perforation with Biodentine was a good option considered that the tooth is still functioning in the oral cavity. Even though the healing is non-complete, bone formation could be visible.

Conflict of Interest: None

Source of support: Nil

Ethical Clearance: Obtained

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