



## A Nonsurgical Technique for the Removal of Overextended Gutta-Percha

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### ABSTRACT

**Aim:** The present report describes and discusses a nonsurgical technique for the removal of overextended gutta-percha.

**Background:** Mechanical irritation results from overextension and the overextended material used during root canal obturation could produce an inflammatory reaction with an area of rarefaction in the periapical tissues. The healing process is not affected by the presence of filling materials as it is well tolerated by the periapical tissues, but it is accepted that a higher failure rate is found in overfilled teeth.

**Case report:** This clinical report describes one case with an overextended gutta-percha cone and a new nonsurgical technique to remove this material.

**Conclusion:** The technique described is a conservative, safe and plausible option to remove extruded gutta-percha in periapical area.

**Clinical significance:** Overextended gutta-percha cones could increase the failure of endodontic therapy. Commonly surgical procedures are indicated to remove this overextended material, but this nonsurgical technique could be a better treatment alternative and could increase the chances of success.

**Keywords:** Gutta-percha, Periapical tissues, Overextended.

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**Conflict of interest:** None declared

### INTRODUCTION

A complete sealing of the root canal system after cleaning and shaping is critical to successful endodontic therapy.<sup>1</sup> It is generally agreed that all root canal filling materials should be confined to the root canal system. However, one complication that occurs during obturation is overextension, especially in cases of immature, resorbed or overinstrumented root canal apices.<sup>2</sup> Mechanical irritation results from overextension and the overextended material could produce an inflammatory reaction with an area of rarefaction in the

periapical tissues. The healing process is not affected by the presence of filling materials as it is well tolerated by the periapical tissues,<sup>3</sup> but it is accepted that a higher failure rate is found in overfilled teeth.<sup>3-5</sup> Despite all of the above considerations, at times the clinician may be faced with a situation, where a piece of gutta-percha may be located in the periapical tissues, with a small portion within the root canal system. In these situations, the clinician faces the dilemma of how to remove the gutta-percha. Thus, the following case report describes an example of this clinical scenario and a nonsurgical technique for its solution.

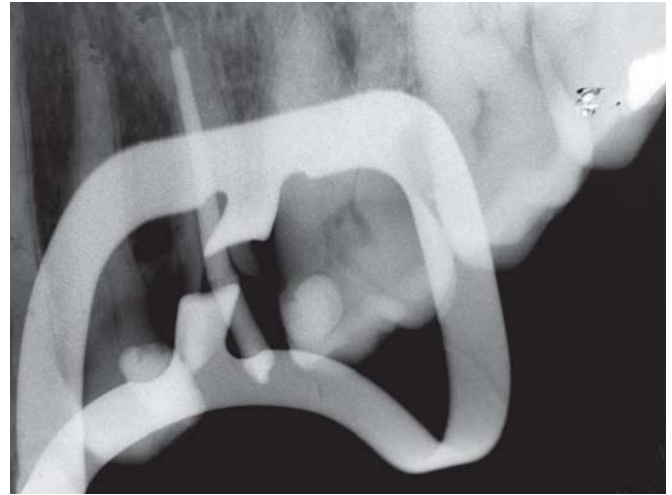
### CASE REPORT

A 13-year-old male was referred to the endodontic unit, regarding endodontic retreatment of the maxillary left second premolar (tooth 25). The tooth exhibited a good endodontic treatment but had not received a final restoration after the previous endodontic treatment. The tooth had remained open for a one-year period and was decided to retreat the root canal.

A detailed radiographic examination of the tooth revealed a good obturation, but overextended gutta-percha with slightly widened periodontal ligament space (Fig. 1). Root canal retreatment was initiated with a combination of rotary M<sub>two</sub> Files (VDW, Munich, Germany) and K-files (Dentsply Maillefer, Ballaigues, Switzerland) to remove the gutta-percha of the canal. During gutta-percha proof, was observed that overextended material still remained in the root canal (Fig. 2). Prior to filling the canal, an attempt was made to determine if the gutta-percha could be removed conservatively. Initial use of Hedstrom files 10 and 15 revealed that the instrument could be partially bypassed and that it was loose within the root canal. Although the instrument was loosely bound, several attempts at removal with hand files and copious irrigation with 0.9% saline solutions were unsuccessful. Following this, the apical 2 to 3 mm of a 10 K-file (Dentsply Maillefer, Ballaigues,



**Fig. 1:** Periapical radiograph of the tooth 25 showing an overextended gutta-percha with slightly widened periodontal ligament space



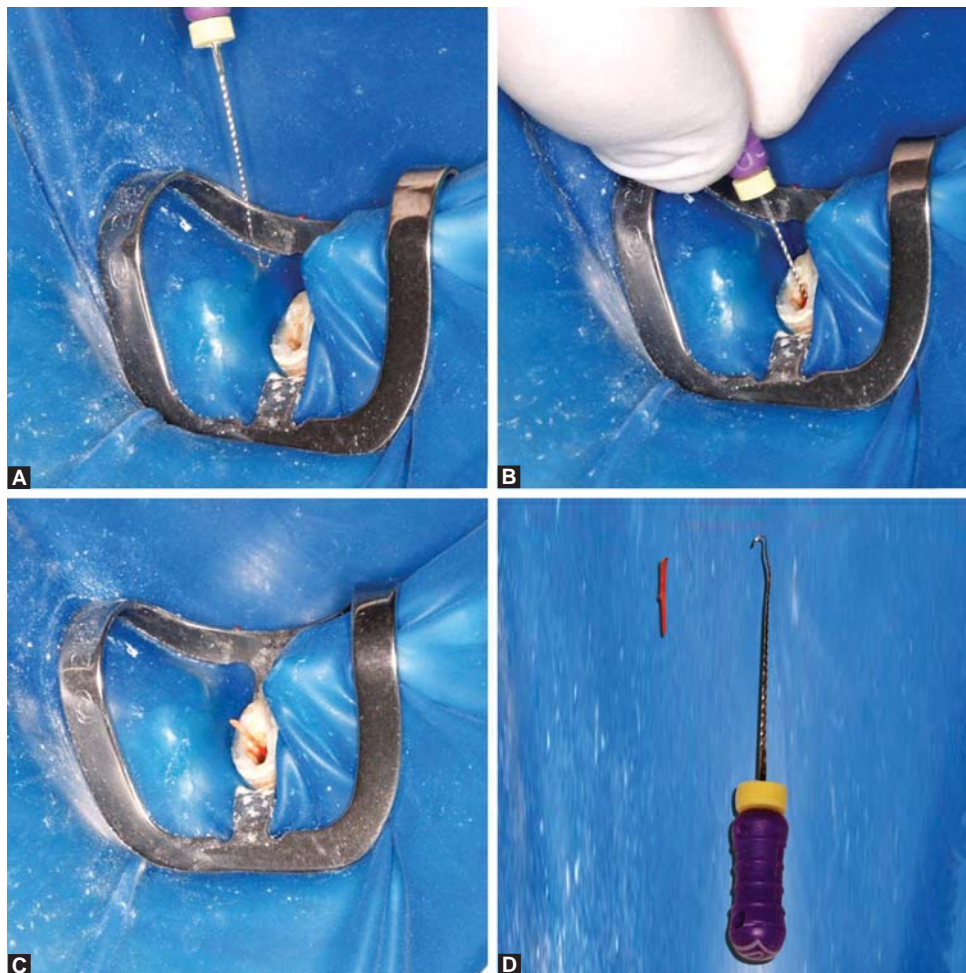
**Fig. 2:** Periapical radiograph of gutta-percha proof showing overextended material still remained in the root canal

Switzerland) was curved (Fig. 3A). The file was then inserted into the canal and using careful movements the gutta-percha was pierced and pulled out of the canal (Figs 3B to D). A radiograph was taken to confirm the gutta-percha removal (Fig. 4A). The canal was then routinely prepared and filled with lateral compaction of gutta-percha

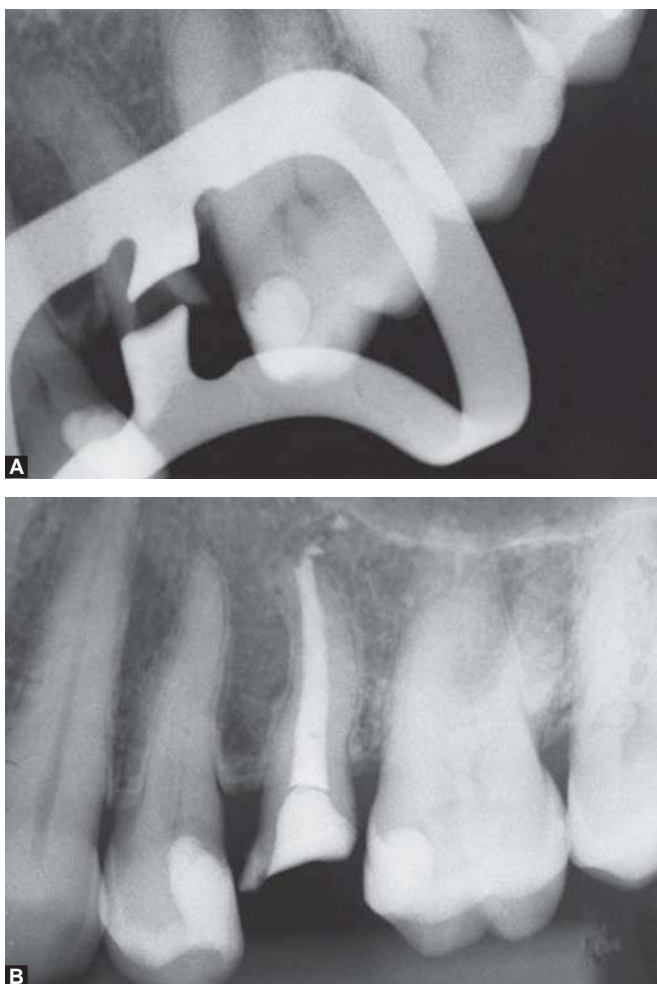
and Endomethasone N (Septodont, Saint Maur des Fosses, France) sealer (Fig. 4B).

### DISCUSSION

In the present work a case report was presented which after performing the chemomechanical instrumentation, it was



**Figs 3A to D:** (A) The apical 2 to 3 mm of a 10 K-file was curved; (B) the file was then inserted into the canal; and (C and D) using careful movements the gutta-percha was pierced and pulled out of the canal



**Figs 4A and B:** (A) Periapical radiograph confirming the gutta-percha removal, and (B) further root canal obturation

not possible to remove the apical portion of gutta-percha. In addition, a portion of gutta-percha was found spilled in the periradicular tissues. Although the literature shows that gutta-percha is an inert material that does not cause tissue damage,<sup>3</sup> it is known that success rates in cases of gutta-percha overfilling are smaller than in cases which this material is restricted to root canal system.<sup>3-7</sup> In a 10-year clinical follow-up study on 775 endodontically treated roots was concluded that the highest success rate was obtained when obturation terminated 1 mm short of the radiographic apex.<sup>6</sup> Another study also showed that the best prognosis was founded for roots in which the filling reached within 0 to 2 mm of the apex.<sup>7</sup> For this reason. It was decided to try the removal of extruded gutta-percha.

Most previously described root filling removal techniques, such as heated pluggers, ultrasonics, rotary files and solvents are not safe options for removal extruded portions of gutta-percha.<sup>8-10</sup> In comparison to the above techniques, the proposed technique is a conservative technique that does not require dentine removal, is simple and quick to perform, does not require direct vision or straight line access and can be easily performed.

## CONCLUSION

The technique described in this case report is a conservative, safe and plausible option to remove extruded gutta-percha in periapical area.

## CLINICAL SIGNIFICANCE

Such knowledge may also contribute on further endodontic treatments increasing the success in endodontic therapy.

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