

## The Clinical Approach in A Case of An Endodontic Therapeutic Failure At Upper First Molar Level (Clinical Case)

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**Abstract:** The persistence of functional teeth on the arch for a long enough period of time represents an accomplished goal due to the existence and constant improvement of the conservative means of treatment. The misapprehension regarding the complexity of endodontic space is one of the various failures of the endodontic treatment. The aim of this article is to emphasize the clinical approach of a retreatment case of endodontic therapeutic failure at upper first molar level. First, it would be preferable to try an orthograde endodontic retreatment because this is the most conservative way of treatment.

**Keywords:** upper fist molar, endodontic space, orthograde endodontic retreatment

### I. Introduction

The endodontic treatment implies a series of steps ( diagnostic, isolation, cleaning and shaping, obturation), conscientiously and rigorously done, each of them being important for the endodontic success. Although the outcome success of an endodontic retreatment is high, up to 90-95% (14), the failure might occur. The misapprehension regarding the internal morphology of endodontic space is one of the various failures of the endodontic treatment. Regarding the upper first molar, it is well known that the mesiobuccal root has two canals in most of the cases. There are numerous studies which confirm this statement, such those conducted by Hess ( percentage of 53% ) (6), Pineda and Kuttler ( 60.7% ) (10), Smith, Nosonowitz and Brenner (64%) (9), Acosta Vigouroux and Trugeda Bosaans (69.4%) (1), Aydos and Milano (84%) (3), Stropko (93%) (13) and Kulid ( 96.1% ) (7).

All the authors agree on one fact: two root canals exist within mesiobuccal root in more than half of cases. (2)

Teeth with endodontic treatment and persistent periapical lesions can follow one of the various choices of tretment: orthograde endodontic retreatment, surgical treatment or extraction. (15, 8)

### Case presentation

Patient B.M., 48 years old, presenting discomfort on mastication and a carious lesion at the level of upper left first molar. Medical history are not conclusive, but the dental history reveals an endodontic treatment at this tooth eight years ago. The extraoral examination does not present modifications. The intraoral examination gives information about the existance of an old amalgam obturation, inaccurate restoration margins and recurrent caries. The tooth is nonresponsive to pulp testing and to percussion gives a positive response. ( Fig. 1)



**Fig. 1:** Initial clinical aspect

The radiographic examination reveals a tooth with an incomplete endodontic treatment, associated with an apical radiolucency lesion at the level of the mesial root. ( Fig.2 )



**Fig.2 :** Rx preoperative

Based on the clinical evaluation, the final diagnosis is Chronic Apical Periodontitis. The treatment choice is the orthograde endodontic retreatment.

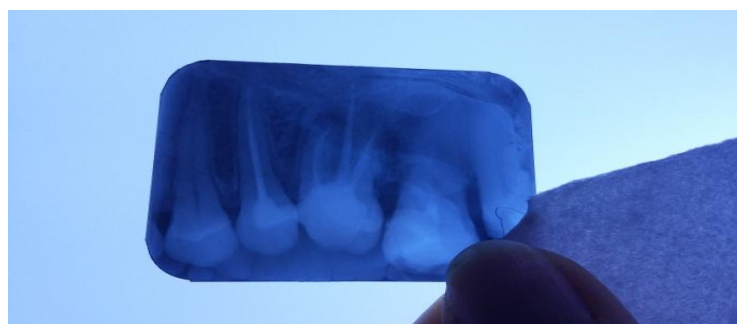
**The operating protocol:**

- removing the old filling and cleaning all the carious lesion, using round and cylindrical burs
- creating an adequate access cavity and removing ultrasonically the dentinal shelf which hides the underlying MB2 orifice
- removing the old gutapercha with k-files and eucalyptol
- determining the working length with apex locators
- cleaning and shaping with ProTaper System, irrigation with 5.25% sodium hypochlorite (NaOCl), 17% EDTA, and chlorhexidine, ultrasonic activated irrigation
- intracanal medication with calcium hydroxide
- obturation with ProTaper Mastercone and AH+ sealer
- coronal restauration with a fiber post
- metalo-composite crown

The patient is now in a clinical and radiographic recall. ( Fig. 3, Fig. 4, Fig. 5, Fig. 6 )



**Fig.3:** Cleaned and shaped canals



**Fig. 4:** Rx postoperatively



Fig. 5: build-up with fiber post



Fig. 6: Metalo-composite crown

## II. Discussions

In case of an endodontic retreatment, the first step is a careful examination of the tooth. Because the restorative materials changes the external anatomy of the dental crown, creating the access cavity and locating the orifices becomes more difficult. In the majority of cases, removing all the filling is the best option, so the endodontic space becomes more visible. Misapprehension regarding the internal morphology of the endodontic space and incomplete cleaning of it represents one of the various failures of the endodontic treatment. At the upper first molar level, missing and not cleaning the fourth canal might develop in time a periapical lesion. In endodontic literature, although the percentages in which two mesiobuccal canals exist within this root vary according to the various authors, they all agree on one fact: the upper first molar has four canals unless is demonstrated the opposite. It is well known that frequently the MB2 orifice is hid by a dentinal shelf and it is located on the groove that joins the palatal and mesiobuccal canals. Utilization of the operating microscope improve observing the MB2 orifice. In regard to the clinical approach in this case, the orthograde endodontic retreatment was the treatment choice, this one being the most conservative. The pathobiology of teeth with inadequate root canal treatments and periradicular lesions are: *Enterococcus faecalis* ( the most frequent), *Streptococcus spp* and *Tannerella forsythia*. (16) For a proper elimination of the residual bacterias, one has to remove the entire obturating material, do a new cleaning and shaping and irrigation. (4)The aim of the endodontic retreatment is to reach the apical constriction, to remove all the previous obturating material, and to do a new cleaning and shaping and obturation.

## III. Conclusions

In a case of endodontic failure we do consider that it is preferable to try a retreatment of the case because it is the most conservative choice of treatment. In 2009 the success outcome in case of an orthograde endodontic retreatment is reported to be up to 70.9% at 2-4 years recall and 83% after 4-6 years, and the cases which are going to be a failure are discovered in the first 4 years. (15) Case reports in 2010 about the endodontic success are up to 89% at 5 years recall. (12) This case presents the importance of knowing the complexity of the endodontic space. Utilization of the operating microscope and also the ultrasounds in the endodontic area improve the working procedure at the internal anatomy level, and also the overall treatment success.

## **Contribution Note**

**All authors made equal contributions to the study and the publication.**

## **Bibliography**

- [1]. Acosta Vigouroux, S.A., Trugeda Bosaans, S.A.: Anatomy of the pulp chamber floor of the permanent maxillary first molar. *J. Endod.* 4:214, 1978
- [2]. Arnaldo Castellucci, *Endodontics Volume 1*
- [3]. Aydos, J.H., Milano, N.F.: Morfologia interna o raiz mesiovestibular primerio molar superior permanente. *Rev. Gaucha Odontol.* 21:10, 1973.
- [4]. Bergenholtz G, Lekholm U, Milthor R, Heden G, Odesjö B, Engstrom B. Retreatment of endodontic fillings. *Scand J Dent Res* 1979; 87:217-24
- [5]. Hargreaves, Berman: *Cohen's Pathways of the Pulp*, Eleventh Edition
- [6]. Hess, W.: *The anatomy of the root canals of the teeth of the permanent dentition*. John Bale Sons and Danielsen, London, 1925
- [7]. Kulid, J.C., Peters, D.D.: Incidence and configuration of canal systems in the mesiobuccal root of maxillary first and second molars. *J. Endod.* 16:311, 1990.
- [8]. Lumley P, Adams N, Tomson P. Root canal retreatment. *Practical Clinical Endodontics*. s.l.: Elsevier 2006:69-84.
- [9]. Nosonowitz, D.M., Brenner, M.R.: The major canals of the mesiobuccal root of the maxillary 1st and 2nd molars. *N.Y. J. Dent.* 43:12, 1973.
- [10]. Pineda, F., Kuttler, Y.: Mesiodistal and buccolingual roentgenographic investigation of 7.275 root canals. *Oral Surg.* 36:253, 1973.
- [11]. Roca IN, Jung IY, Lee CY, Siqueira JF, Jr. Polymerase chain reaction identification of microorganisms in previously root-filled teeth in a South Korean population. *J Endod* 2004;30:504—8
- [12]. Salehrabi R, Rotstein I. Epidemiologic Evaluation of the Outcomes of Orthograde Endodontic Retreatment. *J Endod* 2010;36:790–792.
- [13]. Stropko, J.J.: Canal morphology of maxillary molars: Clinical observations of canal configurations. *J. Endod.* 25:446, 1999.
- [14]. Tavares PBL, Bonte E, Boukpepsi, Siqueira Jr. JF, Lasfargues JJ. Prevalence of Apical Periodontitis in Root Canal-Treated Teeth From an Urban French Population: Influence of the Quality of Root Canal Fillings and Coronal Restorations. *J Endod* 2009;35(6):810-813.
- [15]. Torabinejad M, și alții. Outcomes of Nonsurgical Retreatment and Endodontic Surgery: A Systematic Review. *J Endod* 2009;35:930–937
- [16]. Weiger, R., Manncke, B., Werner, H. & Lost, C. (1995) Microbial flora of sinus tracts and root canals of non-vital teeth. *Endodontics & Dental Traumatology* **11**, 15-19.