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## SINGLE-SESSION ENDODONTIC TREATMENT OF A LOWER FIRST MOLAR AFFECTED BY ENDODONTIC AND PERIODONTAL LESIONS: A CASE REPORT

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**Abstract:** The correlation between pulp pathology and periodontal problems can arise due to the proximity of anatomy and vascularization between the pulp and periodontium, and due to existing communication pathways through neural structures. Endo- perio problems are more frequent in posterior teeth than in anterior teeth, due to the higher number of accessory canals present in these teeth. The objective of this work is to present a clinical case of single-session endodontic treatment of a first lower molar with an endo- perio lesion. A female patient went to the multidisciplinary clinic of Ceulp / Ulbra-To for a routine examination. In the anamnesis, she reported discomfort in tooth 36. The cold sensitivity and vertical percussion tests showed negative results, absence of tooth mobility, however, periodontal probing exceeded 10 mm of penetration. Radiographic examination revealed a radiolucent area circumscribing the periapical and periodontal region of the mesial root. The dental element was instrumented with the Prodesing S system, irrigated with 2.5% sodium hypochlorite ( Na-OCl ), and the final irrigation was with 17% EDTA. The canals were dried and obturated using the continuous wave thermoplasticization technique. Follow-up of the endo/ perio lesion was performed for up to 8 months. During follow-up visits, the periodontal pocket was irrigated with 2% chlorhexidine gel and physiological saline, and periodontal scaling was performed. A reduction in the pathological process and regeneration in the periradicular and periodontal region were observed. It is possible to conclude that single-session endodontic treatment of a tooth with endodontic and periodontal lesions is feasible and yields good results.

**Keywords:** Endodontics, periodontics, single session.

## INTRODUCTION

The interrelationships between pulpal and periodontal disease occur primarily due to the intimate anatomical and vascular connections between the pulp and the periodontium; these interrelationships have traditionally been demonstrated using radiographic, histological, and clinical criteria. Some studies suggest that the two diseases may have etiological influences on each other's progression. The main pathways of communication between the two types of tissue are the apical foramen, the lateral and accessory canals, and the dentinal tubules (Cohen and Hargreaves, 2011).

Despite knowledge of the anatomical relationships, the pathogenesis of endodontic-periodontal lesions has not yet been fully elucidated. A greater understanding of the relationship between microorganisms present in periodontal pockets and root canals of teeth with these lesions would be useful in understanding the etiology of the combined disease. Determining the cause is crucial to avoid inappropriate treatment, as well as allowing a considerable chance for the disease to be successfully treated ( Bergenholz & Hasselgran , 2008).

Primary endodontic disease with secondary endodontic involvement and true combined disease present very similar clinical and radiographic characteristics. Therefore, in the management of lesions of pulpal or periodontal origin, making an accurate diagnosis of the source of infection is a critical determinant of treatment outcome ( Peeran et al., 2013).

Given this context, the objective of this study is to present a clinical case of single-session endodontic treatment of a lower first molar with an endo- perio lesion .

## CASE REPORT

Initially, anamnesis, tactile inspection, and periapical radiography of the dental element were performed (Figure 01), followed by anesthesia with Lidocaine 1:200000 ( Sirona / Dentsply , Tusla , USA). Subsequently, prophylaxis of the tooth was performed with a white straight CA brush ( Microdont , Socorro - SP) and Herjos prophylaxis paste ( Vigodent , Rio de Janeiro - RJ), caries removal with low-speed spherical burs ( Sirona / Dentsply , Tusla , USA), and coronal opening with 0.2% (A Fórmula compounding pharmacy, São Paulo-SP ).



Picture - 01 – Initial X-ray

Source: Own work

Initial exploration with a #10 or #15 K-file ( Sirona / Dentsply , Tulsa , USA) was performed to the apparent length of the tooth. Instrumentation technique used was with the Prodesign S rotary motor and system (Easy, Belo Horizonte – Brazil), followed by preparation of the cervical third with 30/10 Prodesign S (Easy, Belo Horizonte – Brazil) and 25/08 Prodesign S (Easy, Belo Horizonte – Brazil) files in a crown-to-apex direction, respecting the canal anatomy and always maintaining a minimum distance of 5 mm from the apical limit on the radiograph and, in curved canals, up to the beginning of the curvature. Next, odontometry was performed with a Root ZX apex locator (J Morita, Kyoto – Japan), obtaining the actual length of the tooth. Foraminal patency will be achieved with a 25/01

Prodesign S rotary file (Easy, Belo Horizonte – Brazil) 1 mm beyond the actual length of the tooth, as defined by the electronic apex locator. Patency check with a file (10 or 15). Subsequently, a 25/06 file created the apical stop 0.5mm short of the actual tooth length, thus establishing the working length.

Throughout the instrumentation, irrigation was performed with 2.5% sodium hypochlorite (Compounding Pharmacy – Fórmula e Ação – São Paulo – SP), using a Luer plastic syringe. Slip 10 mL ( Advantive , Nanchang Jiangxi - China) and a 25 x 0.55 disposable needle (BD, Curitiba - PR). 30 mL of solution will be used per experimental unit. The needle was inserted throughout the instrumentation process until it reached 2 mm short of the working length.

The canals, at the end of the preparation, were dried with capillary tips. Tips (Ultradent Products , Inc., South Jordan, Utah, USA) coupled to a high-power suction device and with absorbent paper cones ( Tanari , Manacapuru - AM).

The final irrigation was performed with 3 mL of 17% EDTA (Compounding Pharmacy – Fórmula e Ação – São Paulo – SP). First, 1 mL of 17% EDTA was introduced, followed by ultrasonic vibration with a 25 IRRI S insert (VDW; Endo Ultrasonic Files, Endodontic Synergy, Munich, Germany ) at a frequency of 30 kHz. The ultrasonic insert was connected to a piezoelectric ultrasound operating at 30 kHz ( CVDent 1000; CVD Vale, São José dos Campos, SP, Brazil), set at power level 3, for a period of 20 seconds. This process was repeated twice more. After this process, irrigation was performed with 5 mL of sodium hypochlorite (Fórmula & Ação Pharmacy, São Paulo - SP). The canals were dried with capillary tips. Tips (Ultradent Products , Inc., South Jordan, Utah, USA) coupled to a high-power suction device and with absorbent paper cones ( Tanari , Manacapuru - AM).

The obturation cement used was AH Plus (Sirona / Dentsply , Tulsa , USA) and was spatulated according to the manufacturer's recommendations.

The canals were obturated in the same session using the Continuous Wave Condensation technique (Buchanan, 1994), which follows the principles of Schilder 's technique (1967) using the Touch'n Heat equipment. For this purpose, accessory cones M and FM ( Tanari , Manacapuru - AM) were selected. These were calibrated using an endodontic calibrating ruler ( Sirona / Dentsply , Tulsa , USA) and adjusted to the working length. The thermoplasticizer of the Touch'n Heat device performed the cutting, plasticizing, and condensation of the gutta-percha within the canals, up to 11 mm inside the root canal. This phase of obturation is called "Down Packing ". Subsequently, Back Fill was performed to fill the entire root canal with thermoplasticized gutta-percha (Figure 02).



Figure 02 – X-ray of the filling

Source: Own work

A definitive composite resin restoration was performed after the treatment, and a final radiograph was taken with a radiographic positioner ( Indusbello , Londrina - PR). At the same time, root planing was performed with Gracy curettes , and the periodontal pocket was prepared with 2% chlorhexidine gel and physiological saline solution, followed by periodontal scaling.

## RESULTS

Follow-up of the endo/ perio lesion was performed for up to 8 months. During the follow-up visits, the periodontal pocket was irrigated with 2% chlorhexidine gel and physiological saline, and periodontal scaling was performed. A reduction in the pathological process and regeneration in the periradicular and periodontal region were observed (Figures 03 and 04).



Figure 03 – 6-month follow-up X-ray

Source: Own work



Figure 04 – 8-month follow-up X-ray

Source: Own work

## DISCUSSION

Surgical and non-surgical endodontic treatments have a high success rate in treating and preventing apical periodontitis when performed according to standard and accepted clinical principles. However, in some cases, endodontic periapical lesions persist, requiring consideration of additional treatment when apical periodontitis continues. Although several treatment modalities have been proposed for endodontically treated teeth

with persistent apical periodontitis, there is a need for less invasive methods with more predictable results. The advantages and disadvantages of existing approaches for the diagnosis and treatment of endodontic periradicular lesions are discussed in this review ( Kasra). Karamifar et al., 2020).

Avinash Kavarthapu et al., 2019, conducted a case report describing the successful treatment of a right lower first molar with a periodonto-endodontic lesion in a 28-year-old patient with aggressive periodontitis. Initial treatment consisted of endodontic treatment followed by regenerative periodontal therapy with bone grafting and platelet-rich fibrin. The tooth's prognosis was good at the beginning of the study. In addition to the treatments described, patient adherence to treatment was fundamental to the improved prognosis. Therefore, the treatment of periodonto-endodontic lesions is not a difficult task, provided that all protocols are followed throughout the process.

Mina et al., 2016, conducted a case report describing the successful treatment of a left lower first molar with a combined periodontal-endodontic lesion in a 35-year-old Caucasian woman with aggressive periodontitis, using an integrated approach that included endodontic treatment, periodontal therapy, and a periodontal regeneration procedure with an enamel matrix derivative. Despite the initially unfavorable prognosis, the dental lesion healed. The case report also discusses the rationale for the different treatment interventions. Practical Implication: Periodontal-endodontic lesions can be successfully treated if dental professionals follow an integrated treatment protocol that combines the specialties of endodontics and periodontics. General practitioners can be primarily responsible for managing these cases.

## CONCLUSION

In the case presented, a single-session endodontic treatment of a left lower first molar with an endo- perio lesion shows regression of the lesion, and the patient remains asymptomatic.

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