

Endo-Periodontal Lesion Treatment: Keep or Remove. A Case Report

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Abstract

The pulp and the periodontium have embryonic, anatomical and functional interrelationships. Endo-periodontal lesion is a pathological condition in which pulp and periodontal tissues are simultaneously affected on the same tooth. The concomitant existence of pulp and periodontal diseases can complicate diagnosis and treatment planning. Knowledge of these procedures and their evolution is essential to reach the correct diagnosis, and therefore, to carry out the appropriate treatment.

The following case is a combined endo-periodontal lesion in which endodontic and periodontal treatment was performed, with its radiographic follow-up at 4 years.

Keywords: Endo Periodontal Lesions; Periodontal Abscess; Endodontic Abscess; Periodontal Pathology; Endodontic Pathology

Abbreviations

EPL: Endo-periodontal lesion; UCV: Universidad Católica de San Vicente Mártir.

Introduction

Endo-periodontal lesion (EPL) is a combined pathological condition in which pulp and periodontal tissues are affected concomitantly in the same tooth [1-3].

This can happen due to a pathological communication that is established between both tissues, by physiological or non-physiological routes, and that favors bacterial spread [1-4].

Regarding the physiological routes, they can be anatomical communications that relate the periodontal to the pulp, such as: lateral canals, accessory canals, dentinal tubules and the apical foramen, the latter being the main way of communication between the two [5]. Microorganisms are considered as the main etiological factor, and specially bacteria, they play a crucial role in the formation and the progression of endodontic and periodontal pathologies [1-4].

These claims are well established from the earliest studies, as in that of Kakehasi, *et al.* [6], in which they demonstrated the relationship of bacteria with pulp pathology and periradicular tissues; or as in the study by Moller, *et al.* [7], carried out in monkeys, in which they observed that necrotic pulp tissue not infected by bacteria did not induce periradicular lesions or inflammatory reactions. Adrianes, *et al.* [8], also observed in their study that the bacteria in the periodontal pockets had the ability to reach the root canals to the pulp. There are also contributing factors associated with non-physiological routes such as:

trauma, root resorption, fissures or fractures, malformations and perforations or complications derived from endodontic treatment of an iatrogenic nature, which greatly influence the development and progression of said EPL [2,4,9].

The most common signs and symptoms associated with a tooth affected by this pathology are: the presence of a narrow and deep periodontal pocket that reaches or is very close to the apex and a negative or altered response when performing pulp vitality tests. In order of prevalence, it can also be found: apical bone loss or in the furcation area, spontaneous pain, percussion pain, purulent exudate, dental mobility, fistula and soft tissue alteration [1].

The classification most commonly used traditionally for the diagnosis of EPL was published in 1972 by Simon, *et al.* [10], which includes: primary endodontic injuries, primary endodontic injuries with secondary periodontal involvement, primary periodontal injuries, primary periodontal injuries with secondary endodontic involvement and "true" combined injuries [1-10].

However, one of the described problems that arises in this classification is that if the primary focus of an infection does not affect other tissue, it is not a combined EPL, it does not need any additional treatment, since periodontal and endodontic diseases can develop independently and would only become part of a combined problem if both came to have a link [1,3,4,11].

Al-Fouzan, *et al.* [3], they proposed a new classification based on the primary pathology with its side effect (Table 1).

In the "World Workshop 2017" [1] it was indicated that, ideally the diagnosis and classification of EPL should be based on

1. Retrograde periodontal disease	a) Primary endodontic lesion with drainage through the periodontal ligament. b) Primary endodontic lesion with secondary periodontal involvement.
2. Primary periodontal lesion	
3. Primary periodontal lesion with secondary endodontic involvement	
4. Combined endodontic-periodontal lesion	
5. Iatrogenic periodontal lesion	a) Root perforations b) Coronal leakage c) Dental injuries or trauma d) Chemicals used in dentistry.

Table 1: Classification of endo-periodontal lesion proposed by Al-Fouzan., *et al.* in 2014 [3].

the current state of the disease, signs and symptoms that can be evaluated at the moment the injury occurs and they have direct relationship with type of treatment to be performed, as well as the prognosis of the tooth involved, which would determine the first step in treatment planning, which would be to maintain or to extract the tooth (Table 2).

The treatment of these injuries is a real challenge, which needs to raise the possibilities of both pulp and periodontal treatment.

Aim of the Study

The objective of this case report is to expose a method of diagnostic action, to identify if there is an endo-periodontal lesion, to be able to correctly identify the initial cause and subsequently to know how to plan a combined treatment.

Clinical Case Report

A 47 year old caucasian woman and non-smoker, went to the University Clinic of the Catholic University of Valencia (UCV) as

Endo-periodontal lesion with root damage	Root fracture or cracking	
	Root canal or pulp chamber perforation	
	External root resorption	
Endo-periodontal lesion without root damage	Endo-periodontal lesion in periodontitis patients	Grade 1- Narrow deep periodontal pocket in 1 tooth surface
		Grade 2- Wide deep periodontal pocket in 1 tooth surface
		Grade 3- Wide deep periodontal pocket in more than 1 tooth surface
	Endo-periodontal lesion in non-periodontitis patients	Grade 1- Narrow deep periodontal pocket in 1 tooth surface
		Grade 2- Wide deep periodontal pocket in 1 tooth surface
		Grade 3- Wide deep periodontal pocket in more than 1 tooth surface

Table 2: Classification of endo-periodontal lesions proposed by Herrera., *et al.* “World Workshop of 2017” according to root involvement [1].

an emergency in September 2016. Clinically she had and abscess between first and second lower right molars (4.6 and 4.7) with two days of evolution. She had continuous pain, percussion pain, grade I vestibule-lingual mobility and she had bleeding and suppuration on probing. The vitality test were inconclusive.

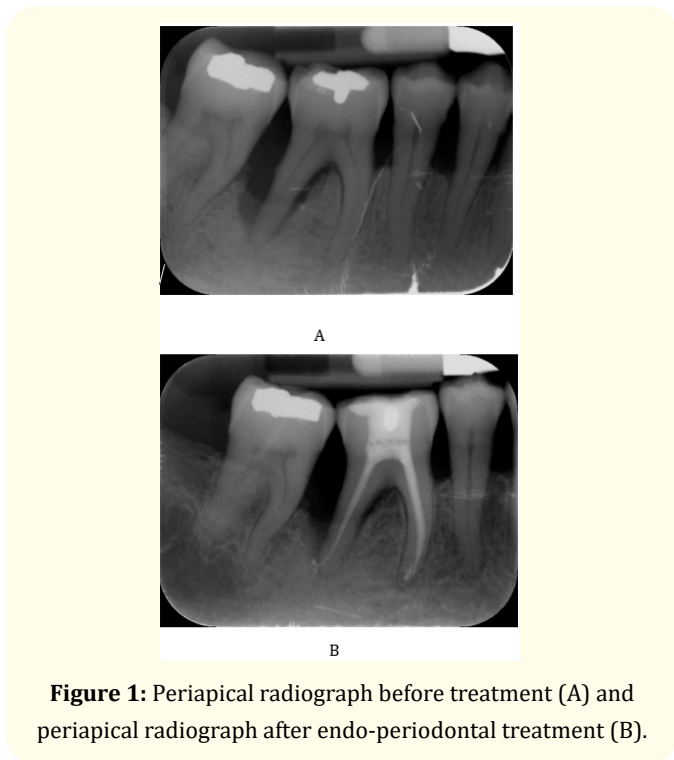
A parallel periapical radiograph was performed, where an area of great bone loss was observed in the distal root of piece 4.6, which involved furcation (grade 2 lesion). Since she did not present any lesion of cariogenic origin, nor a great restoration close to the pulp, nor manipulation of dental tissues for prosthetic purposes that could justify the involvement of the pulp tissue as the origin of the lesion, and she did have active periodontal disease in Stage

III - Grade B, it was concluded as a diagnosis that this was an endo-periodontal lesion due to primary periodontal involvement with possible secondary endodontic involvement.

On this first visit, an antibiotic combination of spiramycin and metronidazole was prescribed (Rhodogil® 750,000 IU/125 mg tablets, 2 tablets every 8 hours for 7 days) and the occlusion was checked, therefore leaving it under occlusion.

On a second and third visit a week later, the complete periodontal study was performed, along with the root scaling and planing of the full mouth, in order to first treat the evident active periodontal pathology.

On a fourth visit, one month after periodontal treatment, the vitality test were carried out again and they were negative, so it was decided to proceed with endodontic treatment (Figure 1).



After two months of combined endo-periodontal treatment, the patient was recalled and a parallel periapical radiograph was performed again. We observed both clinically and radiographically that the patient had tissue stability, and she also had good oral hygiene. Subsequently, we continued monitoring the patient periodontally every 6 months for maintenance therapy. In these sessions we also carried out a radiographic control annually to verify the evolution of the bone lesion and observing the improvement in hard tissue over time (Figure 2).

Discussion and Conclusion

The prognosis of the tooth with EPL can be classified as impossible, reserved and favorable; and it will depend to a great extent on an accurate diagnosis of the exact nature of the session with adequate planning to be able to carry out an effective treatment [1,8]. The impossible prognosis is usually found associated with EPL that arises from the presence of a non-physiological communication route with a history of trauma or caused by iatrogenic factors, or if it arises due to a vertical fracture [1,8]. True combined lesions generally have a poor prognosis,

Figure 2: Periapical radiograph after endo-periodontal treatment at one year (A), two years (B) and three years (C).

which will depend the degree progression of the lesion over time [1,4].

The prognosis of a tooth with EPL associated with endodontical and/or periodontal infections can vary from favorable to impossible depending on various factors: such as the extent and severity of periodontal destruction around the affected tooth and general periodontal health, underlying pathologies (such a Diabetes Mellitus), association of bad habits (tobacco, lack of oral hygiene, etc.) and the patient’s ability to heal. However, due to the complexity of these injuries, we never start from a favorable diagnosis [11].

Multi-root teeth that also have grade III mobility are usually excluded from any type of treatment, since their prognosis will

generally be impossible [11]. The case report was of a multi-root tooth, but had grade I mobility, the patient wasn't smoker and had a very positive and motivating attitude; reason why it was decided to treat the piece, having a forecast least reserved. At all times the patient was aware of this. Since retrospective identification the main cause of EPL is not possible in most cases, the vitality of the pulp together with the width of the periodontal pocket (narrow or wide) and the extent of the periodontal defect are the main factors, to be considered in making treatment decisions [1,4,11].

In some cases, endodontics has been performed as the first step, however in the case presented, the vitality tests were not conclusive at first and therefore the periodontal approach started, which was also affected. Endodontic treatment can be done in two stages as well, leaving temporary intra-canal medication for a few months until radiographic bone healing begins to be seen [9]. The healing of endodontic origin injuries are subject to many modifying factors and can occur over a long period of time [12]. Regarding periodontal treatment, treatment with periodontal surgery has also been described, with open flap debridement alone or in combination with regenerative or resective procedures [4].

As indicated above it is common to observe tissue scarring overtime, months, and even years. In the case that is presented, the evolution of the case was observed for 4 years and about how the healing develops little by little.

True EPL require endodontic and periodontal treatments combined, and their prognosis will depend specially on the response of the periodontal tissue to treatment, assuming that the endodontic treatment is carried out properly [4].

However, in order to successfully treat these EPL, it is necessary to be correct and to be very precise in the diagnosis, since in these cases a good diagnosis is as important as a good treatment.

Conflict of Interest

No conflict of interest exists.

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