Apical Periodontitis Treatment: Surgical - Non surgical?

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Introduction

Clinical Endodontics is defined as the prevention and/or elimination of apical periodontitis [1-3]. Epidemiological studies have also shown that post treatment diseases is very common. The high rate of apical injuries is probably caused by deficient root canal treatments. Among these problems we can include: residual infection in inaccessible areas in the apex [4,5]; intraradicular infection [6]; extrusion of dentin remains with prescence of bacteria in dentinal tubules [7]; poor endodontic practices with or without altering the morphology of the root [8-10] canal and root vertical fractures [11-13]. Insufficient treatment of the root canal can be treated without surgery, while other problems may require surgery. Apical surgery offers immediate access to the root apex. The pathology is removed by curettage and section of the apex with frequent infections contained in the ramifications of the canals [5,14]. A full healing of the apical area is possible after the endodontic treatment. However, it has been observed that in some cases the swelling persists (Figure 1).

It is known that when carrying out the cleaning and disinfection of the canal, some biofilms can remain; these have been classified as different types of organized microorganisms included in a matrix [5]. These biofilms were the most common cause of persistence of the swelling and apical periodontitis [15]. They were also mentioned as inducers of chronic canal disease [5]. It is probable that these bacteria are present in dentinal walls [5,16].

Procedures to carry out the root canal treatment, including root access, instrumentation, irrigation, intracanal medication and sealing of the canal are are carried out in an attempt to eradicate the infection from the canal system and eliminate spaces to avoid re-infection.

In infected root canals, the interior dentinal layer, next to the pulp, contains a great number of microorganisms [17,18].

Likewise, in some cases the bacteria have penetrated deeply into dentinal tubules, so much that they cannot be removed mechanically [19-21]. Clearly, there is no technique available capable of removing the entire infected internal dentin layer in a root canal; therefore, the bacteria remain in dentinal tubules after the instrumentation [21].

Since current procedures cannot remove the bacteria, the sealing of the canal can provide two types of solutions:

1. Prevent a new coronary infection
2. Bury remaining bacteria

Most ink penetration tests, have found colorant at least 1 mm from the foramen [22] indicating that there are spaces between the apical filling and the dentinal wall.

It has been proven that these empty spaces allow the movement of bacteria along the sealing of the canal [23-25].

When the root is poorly sealed, inflammatory cells can be found in the residual pulp tissue. If there is extrusion of sealing material outside the limits of the root apex, there will be swelling in the periapical area. This irritation of sealing material can be the factor causing the inflammatory response [26,27].

Surgical Treatment

The purpose of this surgery is to clean and seal all communication of the root canal near the apex. Indications for apical surgery usually include cases in which canal obstructions do not allow the checking (retreatment) or those in which it would not be advisable to do so (Figure 2).

The conservation of the natural dental piece is still the main goal. For this, we should evaluate, among other things, the possibility of restoration and return of the function of the dental piece.