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RETREATMENT AND ENDODONTIC TREATMENT ASSOCIATED WITH PARENDODONTIC SURGERY

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ABSTRACT

Patient came to the dental office complaining of a blister on top of his tooth. Radiographically, endodontic treatment and the presence of periapical bone radiotransparency were observed. A cone beam computed tomography scan was requested for treatment planning, which determined the presence of an extensive periapical lesion involving teeth 11 and 12. Therefore, we opted for endodontic retreatment of tooth 12 and endodontic treatment of tooth 11. Parendodontic surgery was performed on tooth 12, apicectomy, bone graft and membrane. After one year of treatment, clinical and radiographic preservation of the case was performed, and endodontic therapy of tooth 11

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and parendodontic surgery of tooth 12 were successful. It is concluded that apicoectomy indicates a high success rate if well performed, determining high rates of resolution of periapical lesions, allowing the establishment of favorable conditions for bone neoformation.

Keywords: Endodontics. Computed tomography. Root canal filling material. Apicectomy.

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INTRODUCTION

The microbial increase is pointed out as one of the main causes that influence the onset of the disease in the periodontium-apical and the reduction of the microbial load is one of the most important points of endodontics. Despite the constant evolution of endodontic treatment, there are still cases in which it is not successful. (Tomazinho et al. 2023).

Parendodontic surgery is a surgical procedure used when there are difficulties resulting from an endodontic treatment or not solvable by it, that is, when the periapical lesions do not respond to conventional endodontic treatment or when retreatment is not possible to be performed. (Silva, Machado, 2022).

In the case of periapical lesions, depending on some factors such as the extent and type of existing bacteria, these are more resistant to conventional endodontic treatments, and a great ally of the dentist in these cases is the performance of parendodontic surgeries, which will provide greater effectiveness in a treatment plan to reverse this lesion, undergoing a procedure that will guarantee greater predictability at the end of the treatment (Oliveira, 2021)

It is important to highlight that it is essential that the dentist performs all the necessary clinical and complementary exams on the patient. With the advancement of technologies as the year advances, digital radiography and computed tomography are fundamental allies for an assertive diagnosis and effective treatment plan for a patient affected by this type of pathology. Computed tomography has made great contributions to dentistry, providing greater precision with accurate information about anatomical structures, dimensions, visualization in sections with precision, and differentiation of tissues in the oral cavity (Araujo et al., 2019).

Even with the technological and scientific evolution of Endodontics and the increasing success of endodontic procedures, there are still cases in which there is clinical and/or radiographic failure during primary or secondary treatment, due to several factors, among them are iatrogenesis, lack of anatomical knowledge, errors in radiographic processing, little experience and skill of the professional. Parendodontic surgery is a clinical procedure, used as a resource that aims to resolve endodontic failures, persistent pathologies and cases in which there was failure in retreatment. Therefore, in many cases it is the last resort to contain the infection. (Lima Júnir, 2021).

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In clinical cases where surgical therapy is chosen as a complement to endodontic treatment, it consists of removing the tissues surrounding the root apex, which are contaminated by bacteria and/or microorganisms. This removal aims to combat the causative agent of the persistent lesion, which could not be fully combated conservatively with conventional endodontic treatment. Therefore, the main indications for these surgical interventions are persistent periradicular pathologies, with constant excretion of exudate, cases in which there is root resorption, or even calcification of the dentin canals, which makes it impossible to perform conventional endodontic treatment (Fehlberg, Bittencourt, 2019).

Parendodontic surgery, together with the specific filling materials for each situation, are strong allies of the dentist in the treatment of periapical lesions of great extent, which are resistant to conventional endodontic treatment. This case report addresses the diagnosis, the development plan of the proposed treatment and the preservation of extensive periapical lesions, combining a previous endodontic retreatment, followed by the surgical procedure with the use of parendodontic surgery.

CASE REPORT

Patient C.A.M.A, female, 52 years old, came to the dental office complaining of a blister on top of her tooth. After anamnesis and physical examination, he can see a fistula in the region of tooth 12. (Figure 1).

Figure 1 - Fistula in the region of tooth 12.

Radiographically, endodontic treatment and the presence of periapical bone radiotransparency were observed. (Figure 2).

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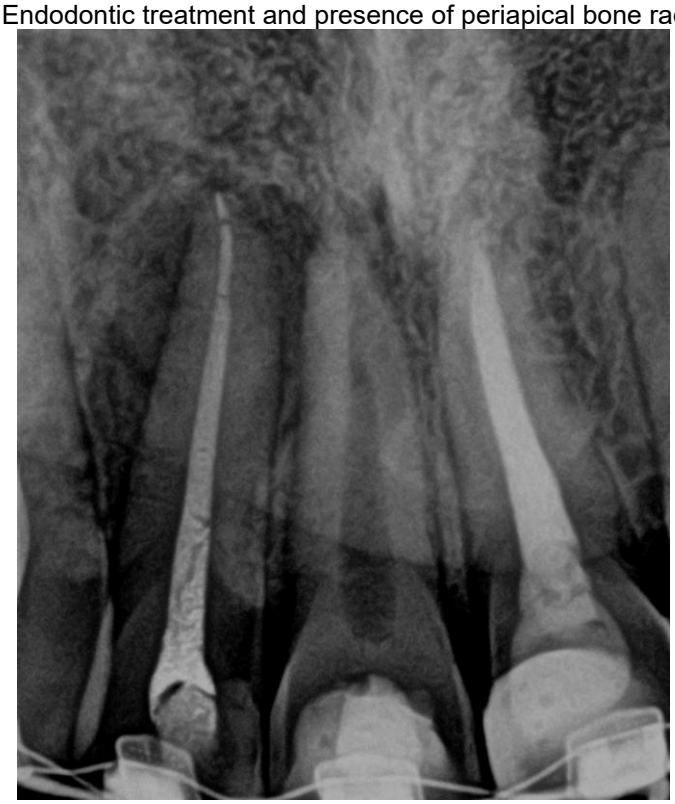
Figure 2 - Endodontic treatment and presence of periapical bone radiotransfer.



A cone beam computed tomography scan was requested for treatment planning, which determined the presence of extensive periapical lesion involving teeth 11 and 12. (Figure 3). Therefore, we opted for endodontic retreatment of tooth 12 and endodontic treatment of tooth 11, since tomography detected periapical bone radiotransparency. (Figure 3).

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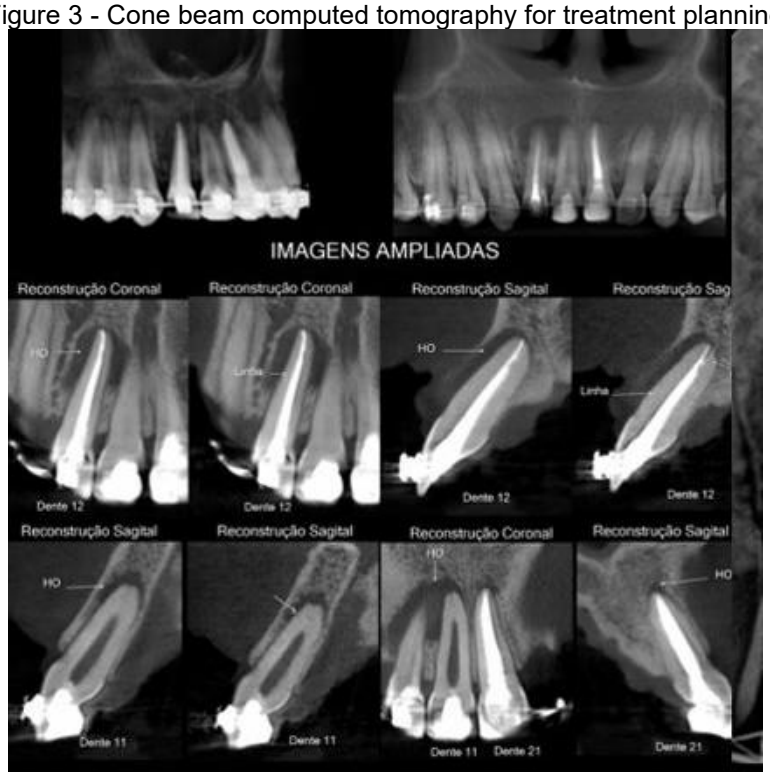
Figure 3 - Cone beam computed tomography for treatment planning



Endodontic treatment of tooth 11 was performed with rotary Solla Collors file #60.03 and foraminal patency with Solla Collors 16/02 Glidepath file one millimeter beyond the apical foramen. The filling of the root canal system was performed using the single-cone technique associated with Bio-C Sealer cement (Angelus).

Retreatment of the root canal of tooth 12 was proposed to the patient, and informed consent was obtained before the start of treatment. After anesthesia, coronary opening was performed and an appropriate form of convenience was performed. Gutta percha was removed with the Prodesign Logic RT #25.08 system. Foraminal electronic odontometry was performed with the Root Zx Mini Apex Locator (J. Morita Corp., USA). The irrigating substance used was 2% chlorhexidine gel. The root canal was reprepared with Lima Solla Collors rotary #60.03 and the foraminal patency was performed with the Glidepath Solla Collors 16/02 file one millimeter beyond the apical foramen. The filling of the root canal system was performed using the single-cone technique associated with Bio-C Sealer cement (Angelus). After one day, the parendodontic surgery was scheduled.

Initially, intra- and extraoral antisepsis with chlorhexidine at concentrations of 0.12% and 2%, respectively, was performed with regional block of the chin and lingual nerves, bilaterally with anesthetic solution of 2% lidocaine with 1:100,000 epinephrine. A Neumann incision was made with a number 15 scalpel blade and total flap detachment; ostectomy to

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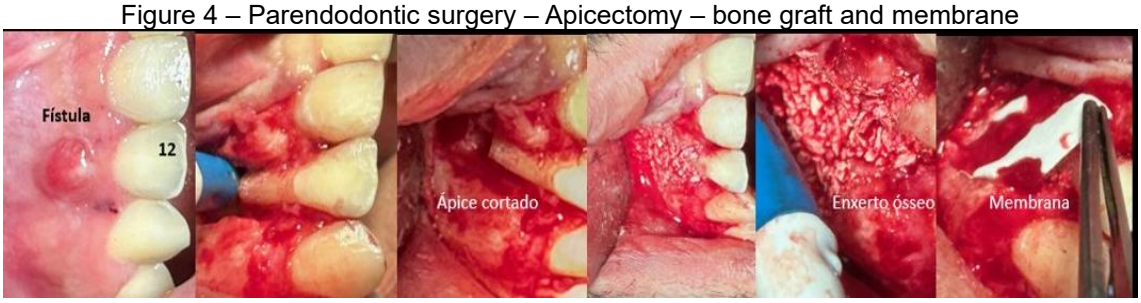
make a bone pocket with the aid of surgical drill number 702 at high rotation, exposing the apex of the dental elements (Figure 2A), followed by curettage of the lesion with a Lucas curette (Figures 2B and 2C), apicoectomy of the apices of 12, also with surgical drill 702 and abundant irrigation with saline solution. Irrigation of the bone pocket with saline solution and filling with bone graft and membrane to aid bone regeneration. The flap was repositioned and the suture was performed with nylon thread (4.0), in simple stitches, and the suture removal was scheduled for the following week. (Figure 4).

Figure 4 – Parendodontic surgery – Apicectomy – bone graft and membrane



After one year of treatment, clinical and radiographic preservation of the case was performed, and endodontic therapy of tooth 11 and parendodontic surgery of tooth 12 were successful. (Figure 5)

Figure 5 - Clinical and radiographic preservation of the endodontic treatment of tooth 11 and parendodontic surgery of tooth 12

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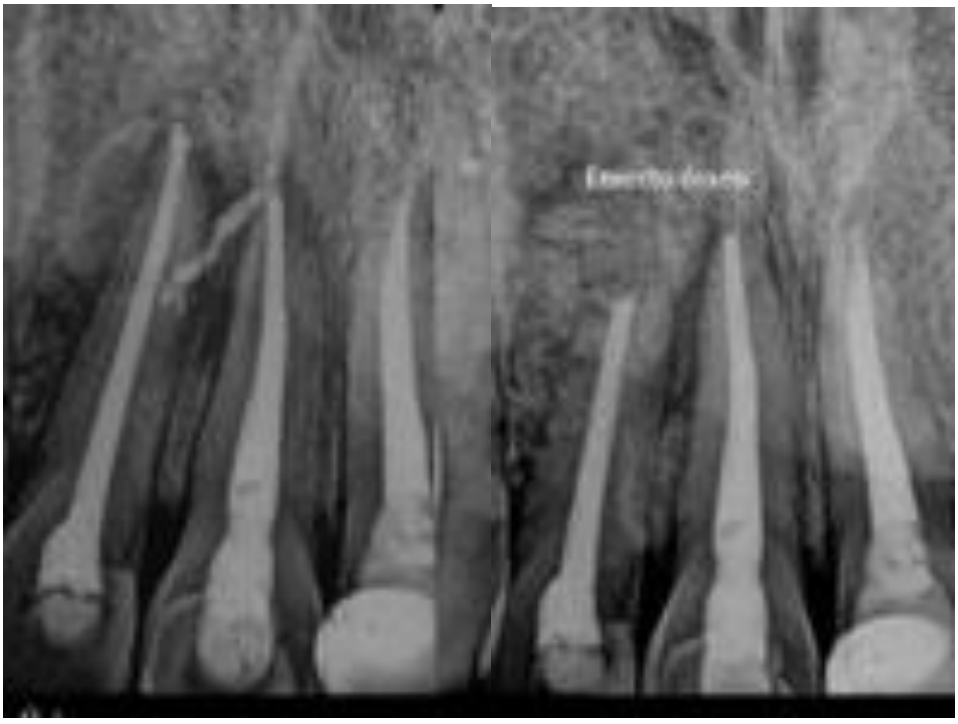

DISCUSSION

Endodontic treatment aims to promote, through biomechanical preparation, the cleaning and disinfection of root canal systems, thus reducing the amount of microorganisms present. Even with high success rates, there are still cases in which endodontic retreatment is needed, which can be complemented with surgical treatment.

From the endodontic point of view, there are two main approaches to failure: conventional endodontic retreatment and parendodontic surgery, which, when well indicated, offer a good prognosis. The choice between one or the other depends on factors such as: access to the channel; location and anatomical situation of the tooth; participation in prosthetic parts; quality of prior endodontic treatment and periapical involvement (Torabinejad, 2022)

In endodontics, conventional radiographic examinations are necessary in all phases of treatment, although periapical radiography is a two-dimensional image, and the most widely used may present limitations that hinder the precise planning of the dentist, such as image distortions and overlapping images that prevent the correct planning and visualization of anatomical structures. To overcome these limitations in diagnosis and planning, cone beam computed tomography (CBCT) has been used to provide three-dimensional visualization of radiographic images. In addition to the reduced radiation dose

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compared to traditional fan computed tomography (CT), 3D images with minimal distortion can be obtained (Dias et al., 2020).

The decontamination of root canals, imaging exams are of paramount importance to ascertain if the parameters are adequate. The most widespread imaging exam within dental offices is periapical radiography, however, there are some factors that contribute to it always having a margin of error, such as image distortions and overlaps. Currently, the imaging test that has been shown to be increasingly efficient is cone beam computed tomography. (Tomazinho et al. 2023).

It is clear that periradicular surgery is an excellent choice in cases where periapical lesions persist after conventional endodontic treatment and retreatment, which makes it clear that it must always be accompanied by a good diagnosis and appropriate treatment plan. It is also extremely important to choose the material used, in which it must be as biologically compatible as possible and must not present a high rate of toxicity. (Silva et al. 2023).

Parendodontic surgery is a safe and appropriate surgical procedure for the treatment of teeth with periapical lesions, which do not respond to conventional endodontic treatment, or when retreatment is not possible (Viana-Wanzeler et al. 2020). It is noteworthy that this surgical technique should be considered as a treatment option for solving periapical problems. It is an alternative to avoid tooth extractions, being a treatment option when the conservative endodontic procedure fails. Despite the high success rates of conventional endodontic treatment, failures still occur. In this context, surgical endodontic management is an alternative when conventional therapy is not indicated. (Meneses Júnior et al. 2020).

Before starting any surgical procedure, it is essential to carry out a preoperative evaluation, that is, to evaluate the patient's general condition, focusing on a thorough inspection of swellings, fistulas, regions with indicated sensitization, percussion, places with perforation, among other local aspects; request imaging exams, then draw up a plan verifying all factors, paying attention mainly to dental complaints. The dental surgeon must establish a good interaction with the patient, collecting all the information necessary for the success of the treatment, as well as keeping the patient informed of all procedures, including their risks and benefits (BRAINE, 2022). Apicoectomy (root canal surgery) is an incision made in the gum tissue to expose the bone in and around the inflamed tissue. The damaged tissue is removed along with a small part of the root tip. A filling is placed at the root end to prevent infection and the gum is sutured. The bone heals naturally around the

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root, over a period of a few months full functioning is restored. Major defects may require bone grafting techniques to preserve form, function, and provide mechanical support to adjacent teeth or teeth (Almeida-Filho et al., 2016). In this case, bone graft and membrane were used for the regeneration of damaged tissues.

When it comes to an apicoectomy, there are a few types of incisions that can be performed. The Dental Surgeon analyzes the best option for each case and which one adapts best without tissue necrosis. Also, providing ease when performing a suture that does not cause so much discomfort to the patient and that is aesthetically pleasing. In the report, it was described as a type of envelope incision, which is one of the most common flaps, which can be performed both lingual/palatine and vestibular, which greatly increases its use rate. It is important to emphasize that no paraendodontic surgery will result in success if the canal is not well filled or if it is not possible, through surgery, to improve its sealing conditions. Thus, before opting for surgery, all treatment attempts must be made, with the aim of solving the problem endodontically, so in this case, it was decided to retreat one day before surgery.

CONCLUSION

It is concluded that apicoectomy indicates a high success rate if well performed, determining high rates of resolution of inflammatory periapical lesions. The parendodontic surgery technique allows the establishment of favorable conditions for bone neoformation.

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