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PARENDODONTIC SURGERY: A CASE REPORT

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Matheus Mendes Carneiro Loiola[1], Victoria Isterfany Pimenta Silva[2], Iwry Adryo Bandeira Santos[3], Ana Beatriz Furtado de Oliveira[4], Ana Emanuele Lucio Teixeira[5], Pedro Ivo Angelim Silva[6], José Carlos Silva Júnior[7], Luis Henrique dos Santos Nogueira[8], Maria Aline Ferreira Damasceno[9], Vinícius Rocha Aguiar[10], Izabela de Souza Freitas[11], Joyce Moura Cassimiro[12], Glailson Sousa Ximenes[13], Ane Caroline Marques Rodrigues[14] and Josfran da Silva Ferreira Filho[15].

[1] Education: Dental Surgeon
Educational Institution: Centro Universitário Inta - UNINTA
Email: matheusloiola32@gmail.com
ORCID: 0009-0001-1883-3954
LATTES: 0959144408177463
[2] Education: Dental Surgeon
Educational institution: UNINTA
E-mail: vitoriaisterfany12@gmail.com
[3] Education: dentistry
Educational institution: UNINTA
E-mail: iwry.bandeira.2000@gmail.com
[4] Education: Dentistry
Educational institution: Faculdade Paulo Picanço
Email: bia23furtado@hotmail.com
[5] Education: Dentistry
Educational institution: UNINTA
Email: emanuele.teixeira7@gmail.com
[6] Education: Dentistry
Educational institution: UNINTA
Email: pedroivoangelim@gmail.com
[7] Highest Degree of Education: Master of Dental Clinic with Emphasis in implantology - Faculdade Paulo Picanço, CE.
Institution: INTA University- UNINTA Sobral. EC.
Email dr.jcarlosjr@gmail.com
[8] Education: Doctor of Clinical Dentistry
Institution: Inta Uninta university center
Email: henriqueintegradas@hotmail.com
[9] Education: Specialist in Endodontics
Institution: Federal University of Ceará -UFC
E-mail: alinedamascenoodonto@gmail.com
[10] Education: Dental Surgeon
Educational institution: UNINTA
Email: viniciusrochaaguiar9@gmail.com
[11] Education: Dental Surgeon
Educational institution: UNINTA
E-mail: souzaizabela09@gmail.com
[12] Education: dentistry
Institution: UNINTA
E-mail: joycemcassimiro@gmail.com
[13] Education: Dental Surgeon
Institution: UNINTA
E-mail: glailsonsousa17@gmail.com
[14] Education: Dentistry
Educational institution: Uninta
E-mail: anecarolinemarques8011@gmail.com
[15] Education: CTBMF Specialist
Educational institution: Faculdade Paulo Picanço - FACPP
E-mail: josfran@usp.br

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ABSTRACT

INTRODUCTION: Endodontics aims to prevent and treat pathological changes in the dental pulp and periapical tissues. Despite the standardized techniques, failures may occur, making paraendodontic surgery an alternative in cases of endodontic failure, especially in the face of persistent periapical lesions. Since the 1990s, endodontic microsurgery has advanced with the development of ultrasonic instruments and biomaterials, increasing success rates to up to 98%.**CASE REPORT:** A male patient presented with pain after endodontic treatment in tooth 22. Clinical examination revealed a fistula, confirmed by radiography and tomography, associated with a periapical lesion caused by extravasated obturator material. Surgery was performed with a quadrangular flap, exploratory osteotomy, and apical curettage. After removing 2 mm from the root apex, it was decided not to perform retrobturation, opting instead for referral for endodontic retreatment. Closure was done with simple sutures, and the patient was instructed for follow-up. **DISCUSSION:** The decision for surgery considered the persistent inflammation and limitations of conventional retreatment. Studies indicate that factors such as bacterial resistance and anatomical complexity influence endodontic failure. Surgery allows the repair of periapical tissues by eliminating infections and injuries. **CONCLUSION:** Paraendodontic microsurgery is effective in cases of endodontic failure, favoring tooth preservation and promoting tissue repair. Follow-up is essential to assess repair and prevent complications.

Keywords: Periapical abscess. Periapical surgery. Root cyst.

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INTRODUCTION

In endodontics, the main focus is on promoting both prevention and treatment when pathological changes appear in the dental pulp or when they affect the periapical tissues. It is essential to understand the agents and pathophysiological mechanisms that damage the dentin-pulp complex so that it is possible to make an accurate diagnosis, as it is through it that the case presented is evaluated, the most appropriate way to approach the various types of lesions and, consequently, to perform a treatment aligned with the patient's needs (PRADO, ROCHA, 2017).

Endodontic treatments are often performed through technical steps that, despite being standardized, are subject to failures, accidents and complications that may occur during clinical practice (MURGUEL; CAMARGO, 2015). In view of the failure of an endodontic treatment, paraendodontic surgery emerges as a viable alternative for situations in which it is sought to solve problems not solved by the initial treatments or even by the retreatment of root canals (ALMEIDA FILHO et al., 2011).

Paraendodontic surgery is an approach widely employed in current dental practice. Since the 1990s, endodontic microsurgery has undergone constant advances. The deepening of knowledge about apical anatomy, combined with the emergence of ultrasonic instruments and the improvement of techniques and biomaterials, has contributed significantly to the increase in treatment success rates, which vary between 58% and 98%, in addition to improving the prognosis of teeth treated using this technique (PAVELSKI et al., 2016).

In order to ensure the success of endodontic treatment, the primary objective during clinical care is to preserve the patient's conditions, thus avoiding the loss of the affected tooth. Therefore, this study aims to report a clinical case of parendodontic microsurgery, carried out at the regional CEO of Sobral, highlighting the techniques and steps followed in the treatment to achieve the desired outcome of the procedure.

CLINICAL CASE

A male patient presented to the Regional Dental Specialties Center of Sobral complaining of pain after endodontic treatment. On clinical examination, a fistula was observed in the region of tooth 22 (Figure 1).

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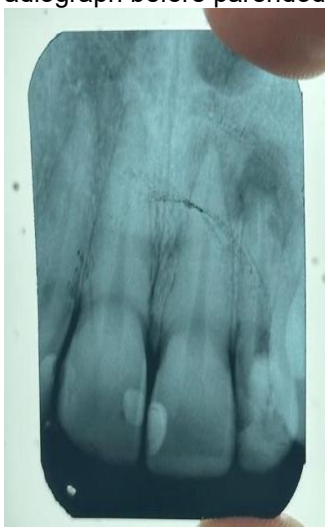
FIGURE 1: Presence of fistula in the region of element 22.

SOURCE: Personal archive

Due to the presence of the lesion, a periapical radiographic examination of the region was requested (Figure 2) identifying a periapical lesion in the region of element 22, possibly associated with the presence of extravasated obturator material (endodontic puff), which could be generating adverse effects in the affected area.

FIGURE 2: Initial radiograph before parendodontic microsurgery.



SOURCE: Personal archive

In view of the periapical findings, a computed tomography (CT) scan of the region where the lesion was located was requested, where it was possible to prove that the lesion was coming from tooth 22 (Figure 2).

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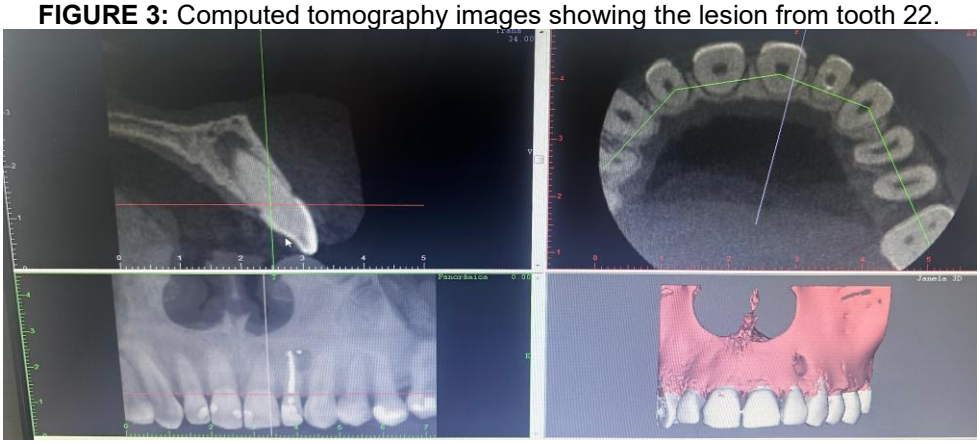
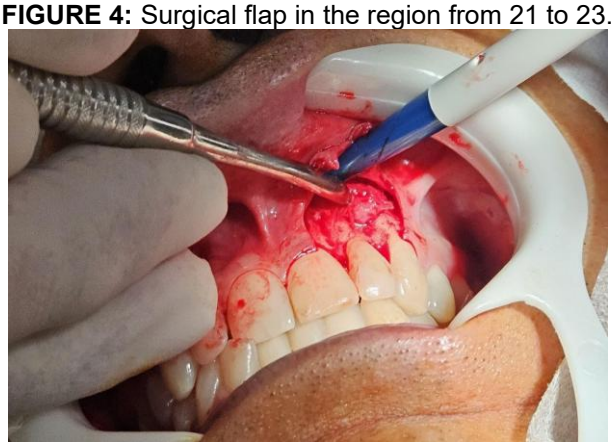
FIGURE 3: Computed tomography images showing the lesion from tooth 22.



SOURCE: Personal Archive.

After the extent of the lesion was confirmed, it was decided to perform a quadrangular flap with two relaxing incisions, covering the region of teeth 22 to 23 (Figures 4 and 5). Anesthesia was performed by block in the upper left alveolar region, complemented by anesthetic infiltration in the vestibular. The surgery was initiated with an intrasulcular incision, using a No. 12 scalpel blade. To access the lesion, a high-speed carbide drill was used, with abundant saline irrigation, promoting wear of the buccal bone cortical in the region below teeth 21 and 23 (Figure 6). The procedure aimed to connect the worked area to the points where the lesion had already caused rupture of the bone cortical.

FIGURE 4: Surgical flap in the region from 21 to 23.



SOURCE: Personal archive.

FIGURE 5: Surgical flap seen from another angle.

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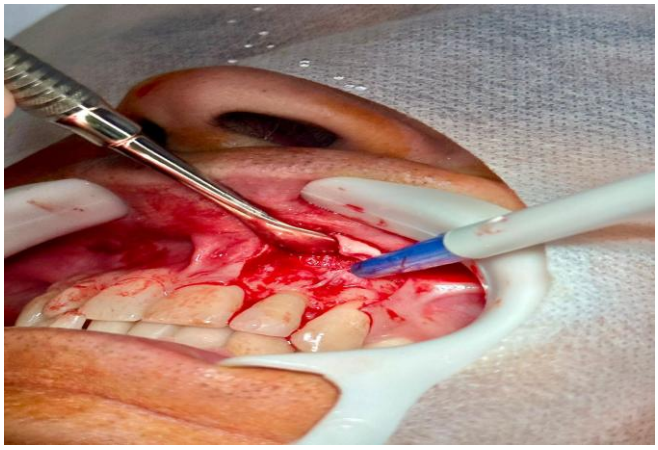
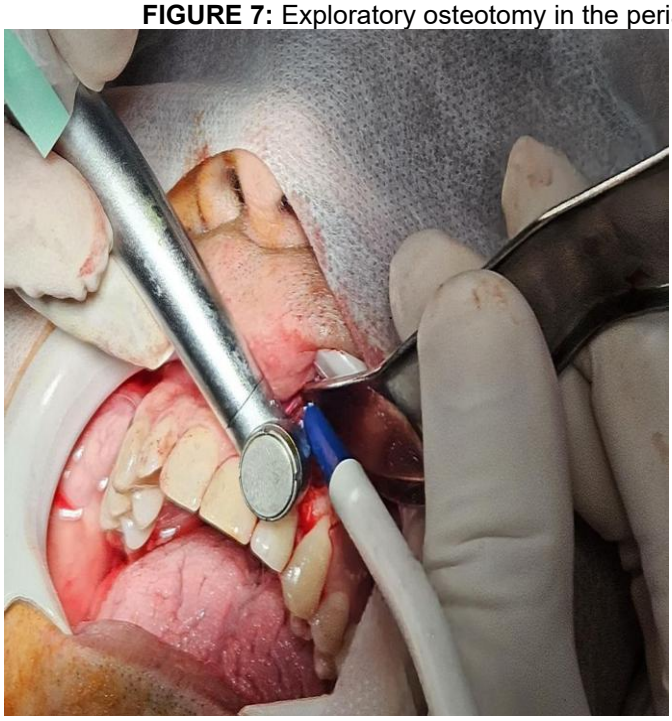


SOURCE: Personal archive.

During the removal of the apical portions, intense irrigation with saline solution was maintained to wash the surgical cavity, removing necrotic residues, bone fragments, and parts of the root apex. Next, an exploratory surgery with osteotomy was performed in the periapical area, exposing the lesion. Complete curettage was performed and approximately 2 mm of the root apex of the affected tooth was removed (Figures 7 and 8). After thorough cleaning of the cavity, it was concluded that retrobturation would not be necessary, as the patient was referred for subsequent endodontic retreatment.

FIGURE 7: Exploratory osteotomy in the periapical area.



SOURCE: Personal archive.

FIGURE 8: Exposure of the lesion in the periapex of the 22.

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SOURCE: Personal archive.

Finally, a simple suture was performed to close the operated area (Figure 9) and the patient was instructed to return for a periapical radiographic examination three months later to follow up the repair process.

FIGURE 9: Simple suture in the region of the anterior teeth.

SOURCE: Personal archive.

DISCUSSION

Non-surgical endodontic retreatment is often the first choice in cases of persistent apical periodontitis in previously treated teeth. The decision between surgical or non-surgical approaches depends on factors such as the size of the apical lesion, the root filling material, the quality of the coronary restoration, and the status of previous endodontic treatment (GEORGE, 2015).

In the case reported, paraendodontic surgery was indicated for tooth 22 due to the presence of a persistent apical lesion. According to Chong and Rhodes (2014), this technique is recommended in cases of chronic periapical inflammation, extensive areas of

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radiolucency, limited coronary access, intraradicular pins that are difficult to remove, perforations, fractures in the apical third or pulp calcifications.

Several factors can contribute to endodontic failure, including the resistance of microorganisms, the anatomical complexity of root canals and the ineffectiveness of some intracanal medications, these microorganisms can develop structural and physiological changes, becoming resistant to conventional treatments (SILVA et al., 2011).

Some bacterial species survive in adverse conditions, even after chemical and mechanical preparation, which reinforces that failure is not exclusively due to technical failures, but also to biological factors (RASQUIN; ARAUJO, 2023).

The success of paraendodontic surgery is linked to adequate three-dimensional cleaning, modeling, and retrobturation (ANDRADE, 2019). Silva et al. (2023) emphasize the importance of periapical curettage to eliminate infected granulomatous tissues and foreign bodies, such as fractured instruments or extravasated cement remains, optimizing tissue repair.

Although it is an invasive procedure, Lopes and Siqueira (2011) highlight that paraendodontic surgery is currently seen as a conservative technique, since it enables the preservation of the dental organ.

Moreti et al. (2019) point out that management varies according to the anatomical and pathological conditions present, such as resorptions, perforations, fractured instruments, or apical fractures. In the case reported here, the technique was chosen to remove the fractured instrument in the apical third of tooth 22 and treat the associated periapical injury, proving to be an effective solution to the situation presented.

CONCLUSION

Paraendodontic surgery is a crucial therapeutic approach in situations where the removal of the causative agent through the root canal is not possible, with the aim of preserving the compromised tooth. Whenever feasible, this technique should be associated with endodontic retreatment, as this combination increases the chances of a positive result.

The main focus of treatment is the complete elimination of the etiologic agent, and any method is appropriate as long as it meets this objective. Careful planning is indispensable for clinical success. Thus, paraendodontic techniques, when performed together with the removal of all infected tissue in the periapical area and surrounding bone, create an environment conducive to bone regeneration.

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