

# TREATMENT OF A RADICULAR CYST IN THE LEFT MAXILLARY REGION IN PATIENT UNDER CANCER THERAPY: A CASE REPORT

## TRATAMENTO DE UM CISTO RADICULAR NA REGIÃO MAXILAR ESQUERDA EM PACIENTE ONCOLÓGICO: UM RELATO DE CASO

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### ABSTRACT

**Introduction.** A radicular cyst is an inflammatory odontogenic lesion resulting from pulp necrosis of non-vital teeth. It arises from a chronic inflammatory response that stimulates the proliferation of epithelial remnants of Malassez cells in the periodontal ligament, leading to the formation of a cystic cavity. **Case report.** This case involves a 73-year-old patient, under cancer therapy, who sought dental care complaining of edema in the palatal region near the apices of teeth 23 and 24. Clinical and radiographic evaluation revealed a well-defined radiolucent lesion, compatible with a radicular cyst, confirmed by histopathological analysis. The treatment plan included the extraction of teeth 23, 24 and 25, combined with surgical enucleation of the cystic capsule. **Conclusion.** This report emphasizes the importance of diagnosing periapical lesions and their treatment in patients under cancer therapy.

**KEYWORDS:** Radicular Cyst; Diagnosis, Oral; Surgical treatment; Oncological patients.

### RESUMO

**Introdução.** O cisto radicular é uma lesão odontogênica inflamatória resultante da necrose pulpar de dentes não vitais. Surge de uma resposta inflamatória crônica que estimula a proliferação dos restos de células epiteliais de Malassez no ligamento periodontal, levando à formação de uma cavidade cística. **Relato de caso.** O caso envolve uma paciente de 73 anos, que procurou atendimento odontológico queixando-se de edema na região palatina, próximo aos ápices dos dentes 23 e 24. A avaliação clínica e radiográfica revelou uma lesão radiolúcida bem definida, compatível com cisto radicular, confirmado por análise histopatológica. O plano de tratamento incluiu a extração dos dentes 23, 24, 25, 15 e 45, combinada com a enucleação cirúrgica da cápsula cística. **Conclusão.** Este relato enfatiza a importância do diagnóstico de lesões periapicais e o seu tratamento em pacientes oncológicos.

**PALAVRAS-CHAVE:** Cisto radicular; diagnóstico oral; tratamento cirúrgico.

### 1. INTRODUCTION

Radicular cysts, also identified as periapical cysts, are among the most prevalent cystic lesions of the jawbones, representing approximately half to three-quarters of all cysts affecting these structures. Studies indicate that these lesions account for up to 68% of diagnosed odontogenic cystic lesions<sup>1,2</sup>. These inflammatory lesions are characterized by a pathological cavity lined by stratified squamous epithelium, filled with fluid or semi-solid material, which develops as a direct consequence of chronic periapical inflammatory processes associated with non-vital teeth. The epithelial lining of these lesions derives from the proliferation of small odontogenic epithelial remnants, known as rests of Malassez, located in the periodontal ligament and originating from Hertwig's epithelial root sheath<sup>3,4</sup>.

Radicular cysts are usually asymptomatic and frequently discovered during routine radiographic examinations. In some cases, when the lesion becomes large, local swelling and mild sensitivity may occur.<sup>5</sup> Radiographically, a radicular cyst appears as a well-defined radiolucent area, round or oval, typically surrounded by a thin radiopaque margin continuous with the lamina dura of the involved tooth. However, radiographic differentiation between radicular cysts and periapical granulomas is difficult, requiring histopathological analysis to obtain a histopathological diagnosis<sup>5</sup>.

The treatment decision depends on the size of the lesion and may involve simple enucleation or marsupialization. The presence of cortical bone defects, anatomical limitations, and previous endodontic failures, as well as the operator's skills and technique, influence the treatment and its respective success<sup>6,7</sup>.

This paper describes a case of a radicular cyst approximately 2 cm in length, located in the palatal region in patient under cancer therapy. The reported case

stands out due to the clinical characteristics presented, along with a relevant therapeutic approach.

## 1. CASE REPORT

This case report follows the CARE guidelines (guidelines for case reports). An informed consent form was signed by the patient, authorizing the treatment and subsequent scientific dissemination.

A 73-year-old female patient, M. S. S., presented to the Oral and Maxillofacial Surgery Clinic of the School of Dentistry at Federal University of Goiás (FO-UFG) with the chief complaint of a "nodule on the tooth," which had first been noticed two months prior to the consultation. The patient reported pain on palpation in the left palatal region, near the apex of tooth 23. Her medical history included systemic arterial hypertension and ongoing medical treatment for head and neck carcinoma.

Intraoral examination revealed palpable edema in the left palatal region, extending from teeth 23 to 25, without mucosal ulceration, but with sensitivity to palpation (Figure 1).



**Figure 1.** Swelling in the left palatal region, near teeth 23 to 25, without mucosal ulceration and with tenderness on palpation.



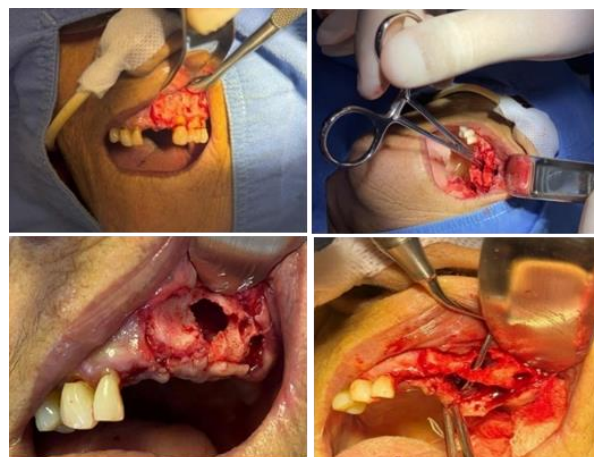
**Figure 2.** Well-defined radiolucent lesion, approximately 2 cm in diameter, located in the apical region of teeth 23, 24 and 25.

The findings suggested an active periapical lesion. Clinical and radiographic evaluation also revealed infectious involvement of teeth 23, 24, 25, and all presenting pulp necrosis, which justified the indication for preventive tooth extraction to avoid infectious complications during oncological treatment. Periapical radiographs were obtained, involving the upper central incisors and the upper right and left premolars. The images revealed a well-defined radiolucent lesion, measuring approximately 2 cm in diameter, located in the apical region of teeth 23 and 24, consistent with a chronic inflammatory lesion (Figure 2).

The therapeutic approach initially involved an aspiration biopsy of the lesion (Figure 3) to confirm the diagnosis, followed by extraction of teeth 23, 24, and 25 and complete enucleation of the cystic lesion under local anesthesia, on an outpatient basis and under adequate aseptic conditions (Figure 4).



**Figure 3.** Aspiration biopsy performed in the lesion area.



**Figure 4.** Enucleation of the cystic lesion.

After obtaining four soft tissue fragments with firm consistency, brownish color, and well-defined borders, they were subsequently sent for histopathological analysis (Figure 5).

The surgical site was sutured with 4-0 silk thread to ensure adequate tissue healing (Figure 6). In the postoperative period, the patient was prescribed clindamycin 300 mg (one tablet every 12 hours for 5 days), nimesulide 100 mg (one tablet every 12 hours for 3 days), and dipyron sodium 500 mg (one tablet every 6 hours for 3 days).

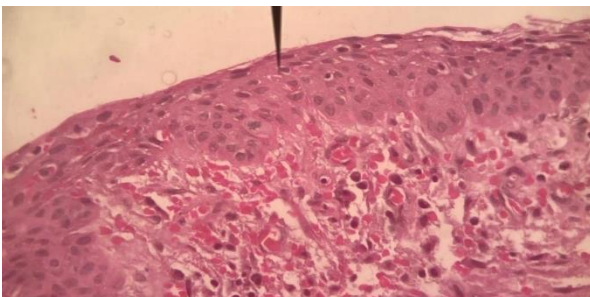


**Figure 5.** Soft tissue fragments obtained after enucleation, firm in consistency and brown in color, sent for histopathological analysis.



**Figure 6.** Suturing of the biopsy site with 4-0 silk suture.

Histopathological analysis of the fragments confirmed the diagnosis of a radicular cyst, histologically characterized by a non-keratinized stratified squamous epithelial lining, associated with chronic inflammatory infiltrate and areas of fibrous connective tissue (Figure 7). Due to ongoing oncological treatment, the patient was unable to return for postoperative follow-up; therefore, it was not possible to obtain a final radiograph.



**Figure 7.** Histological image at higher magnification showing non-keratinized stratified squamous epithelial lining associated with fibrous connective tissue and intense chronic inflammatory infiltrate (H&E staining).

## 2. DISCUSSION

The case presented reports a case of radicular cyst of relevance, since it involves a patient undergoing cancer treatment, a condition that has a direct relationship with alterations in the immune response and consequently in the clinical course of lesions and infections. The study

presents a case with guiding clinical-radiographic findings, emphasizing the importance of a careful diagnostic and therapeutic approach.

The case proved to be compatible with multicenter studies, which demonstrated the predominant presence of radicular cysts in females<sup>8,9</sup>. Regarding the anatomical location of the radicular cyst in this case, it agrees with the literature, which highlights a predominance in the maxilla<sup>9,10</sup>. The lateral region of the maxilla presents specific anatomical considerations that directly influence surgical planning. Proximity to the maxillary sinus is a critical factor, as cystic lesions in this location can establish an oroantral communication, a complication that requires specialized management<sup>11</sup>.

Regarding the treatment performed, surgical enucleation with prior aspiration represents an appropriate therapeutic approach for radicular cysts in the maxillary region, particularly when conservative endodontic treatment is insufficient or when histopathological confirmation is necessary<sup>12</sup>. Enucleation has a high success rate for radicular cysts when performed properly<sup>13</sup>.

Radicular cysts have a high prevalence in the literature, being among the most frequently found, and their susceptibility to transforming into neoplastic lesions is also recognized<sup>10,14,15</sup>. Epithelial remnants of odontogenic cysts have been identified as the main origin of neoplastic transformation. Long-term inflammation, persistent intracystic pressure, and incomplete removal are also associated with the transformation of cysts into neoplasms<sup>15</sup>.

The case presents a peculiarity due to its size, exceeding 2cm with cortical bone expansion in the palatal region. The characteristic presented, due to its extent, is recognized as infrequent in the literature<sup>5</sup>.

Chronic inflammation is indicated as a causative factor of instability in cellular genes, induction of cellular apoptosis, production of cytokines, and may trigger alterations in DNA, that is, altered proteins and cell membrane that can stimulate the transformation of normal and healthy cells into neoplastic cells. These data emphasize the importance of early diagnosis, along with adequate treatment and follow-up<sup>15,16,17</sup>.

Dental treatment in cancer patients is extremely important, especially in the pre-chemotherapy stage, to reduce the possibility of acute infections, which can trigger a potential risk. The total removal of the lesion and dental extraction of all involved elements performed in this case is justified in the literature as a preventive approach aimed at removing any focus of infection<sup>18</sup>.

The challenges in treating cancer patients and specifically irradiated patients must be taken into consideration, considering, for example, the impact of osteoradionecrosis. The prognosis shows an important relationship with access to medical care, as well as daily nutrition, which highlights the impact of oral health on quality of life<sup>19</sup>.

## 3. CONCLUSION

The reported case is important in addressing the

treatment of a symptomatic odontogenic cyst in an oncology patient. The therapeutic approach was successful and reinforces its effectiveness, according to the literature, highlighting the importance of the dentist in the diagnostic process and in the treatment that restores the patient's quality of life.

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