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PERIAPICAL CYST IN THE ANTERIOR REGION OF THE MAXILLA: CASE REPORT

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Abstract: The periapical cyst or root cyst, considered an inflammatory odontogenic cyst, is a lesion most commonly found in the anterior region of the maxilla. It is characterized by being single, slow-growing, and discovered on routine radiographs. This lesion does not present painful symptoms and can reach large proportions, presenting characteristics such as mobility, swelling, and sensitivity. **Objective: The** objective of this study was to report a clinical case of periapical cyst, highlighting the diagnosis, endodontic therapy, and proposed surgical treatment. **Case report:** A 55-year-old female patient, ASA I, attended the clinic for endodontic evaluation of teeth 14, 13, 12, and 11 due to pressure in that area over the previous months, although she reported no pain. Periapical radiographic examinations and cone beam computed tomography revealed an extensive radiolucent, unilocular lesion with precise boundaries, mainly covering the palatal and apical regions of teeth 11, 12, 13, and 14, originating from the apical region of tooth 12. After completion of the retreatment (11 and 12) and endodontic treatment (13 and 14), the patient was referred to hospital care. The hospital physical examination revealed extensive swelling of the palatal mucosa in the region from tooth 22 to tooth 16, with the mucosa appearing pink and of normal texture. However, on palpation, the lesion was found to be fluctuant, suggesting liquid content with . Based on the clinical and radiographic findings, the surgeon made a clinical diagnosis of odontogenic cyst of inflammatory/infectious. Cystic enucleation and surgical resection and apicoectomies were performed on elements 11, 12, and 13. The final histopathological diagnosis was Radicular Cyst. After 12, 15, and 30 days of the surgical procedure, the patient returned and showed favorable progress, reported no pain, and the healing pattern was satisfactory. **Conclusion:** Inflammatory radicular cysts are a common

odontogenic lesion in the anterior region of the maxilla and can cause significant bone expansion, even in asymptomatic patients. This case highlights its occurrence in a 55-year-old female patient with normal blood tests and an extensive radiolucent lesion involving multiple teeth. The diagnosis was obtained through clinical, radiographic, and histopathological examinations. Treatment included endodontic treatment of the affected teeth, apicoectomy, and complete enucleation of the lesion, which provided effective control and minimized the risk of recurrence. This case reinforces the importance of individualized and multidisciplinary planning aimed at preserving the anatomical, functional, and aesthetic aspects of the patient.
Keywords: Apicoectomy; Radicular cyst; Maxilla

INTRODUCTION

A radicular cyst (RC) is classified as an inflammatory odontogenic cyst and may also be referred to as a periapical cyst, inflammatory cyst, dental cyst, or simply dental cyst (El-NAGGAR et al., 2017). This cyst can appear in the maxilla or mandible. Growth is usually slow and asymptomatic. However, it can reach large proportions. Generally, this lesion affects adults between the third and sixth decades of life (GRAZIANI, M 1995). The periapical cyst is characterized by a cystic cavity, which is believed to be formed due to the proliferation and/or degeneration of the remaining Malassez epithelial cells that are stimulated by a process of pulp necrosis of a non-vital tooth (LIN et al., 2007; KARAMIFAR et al., 2020).

Furthermore, they have a fibrous connective tissue capsule lined with epithelium with a lumen containing fluid and cellular debris. Theoretically, as the epithelium sloughs off into the lumen, the protein content increases (NETO et al., 2004). Thus, fluid enters the lumen in an attempt to balance the osmotic pressure, promoting slow growth. However, they can take on large proportions with an increase in volume and mobility of the involved teeth (GOMEZ, 2024).

In addition, diagnosis is made through routine radiographic examinations, such as periapical and panoramic radiographs (SOUZA et al., 2016).

Radiographically, the periapical cyst reveals a radiolucent image with a circular or oval shape, limited by a thin, continuous, and clear radiopaque line, which represents reactive osteogenesis and is located in the periapical region (BARKER; SHERIDAN, 2015; SAPP; WYSOCKI, 2003). Periapical surgery is indicated for lesions exceeding 2 cm and for those associated with teeth in which conventional endodontic treatment is not feasible (TROPE, 2015; NICKEL et al., 2017). It is recommended that a histopathological examination be performed after surgery to rule out possible differential diagnoses such as odontogenic keratocyst among other lesions (KAFER; KAFER, 2018 and SIQUEIRA, 2013).

The objective of this article is to report a clinical case of a periapical cyst in the anterior region of the maxilla, with surgical and endodontic management, between elements 14, 13, 12, and 11 originating from the apical region of element 12.

CASE REPORT

A 55-year-old female patient, normoretic, with leukoderma, sought dental care due to a visible increase in volume in the palate. A thermal test was performed on teeth 11, 12, 13, and 14, which did not respond to the pulp vitality test, with teeth 11 and 12 having undergone previous endodontic treatment. Endodontic retreatment was started on tooth 11, followed by treatment of tooth 13, retreatment of tooth 12, and finally treatment of tooth 14. Initial imaging tests pointed to a possible cystic lesion of apical origin, origina-

ting from tooth 12, which extended to teeth 14, 13, 12, and 11. After completion of the endodontic treatment, the lesion was punctured with a 20 ml syringe, and purulent material mixed with blood was aspirated (Figure 3). The patient was referred to an oral and maxillofacial surgeon for clinical evaluation to determine the diagnosis and further treatment. The consultation revealed extensive swelling of the palatal mucosa in the region from tooth 22 to tooth 16, with the mucosa appearing pink and normal in texture. On palpation, the lesion had a fluctuating consistency, suggesting liquid content inside (probably yellowish fluid). The patient, , reported no pain, only an occasional feeling of pressure over the last few months.

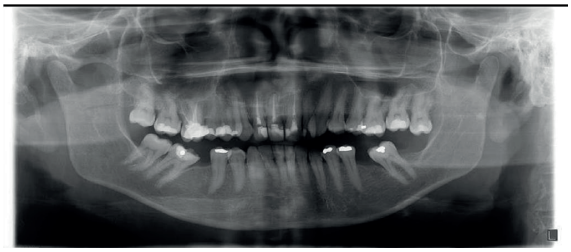

Figure 1: Initial clinical and radiographic appearance.

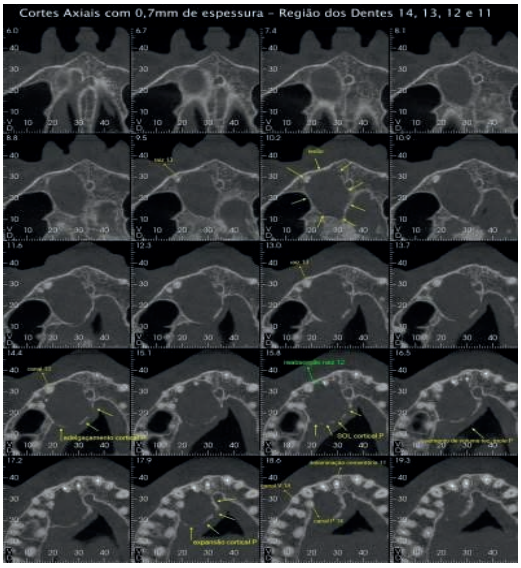

Figure 2: Cone beam computed tomography of the maxilla - Axial sections

Figure 3: Syringe after puncture

A nalysis of imaging tests (periapical radiographs and, mainly, cone beam computed tomography—Figure 2) revealed an extensive radiolucent, unilocular lesion with precise margins, mainly involving the palatal and apical regions of teeth 11, 12, 13, and 14. The lesion caused extensive palatal bone expansion with preservation of the cortical bone, and also expanded by pushing back the floor of the nasal cavity and fenestrating the vestibular bone wall in the apical region of elements 11, 12, and 13. Through clinical evaluations and imaging tests, the surgeon defined the clinical diagnosis as an odontogenic cyst of inflammatory/infectious origin. Thus, treatment of the lesion was planned through surgery performed in a hospital setting for enucleation and surgical resection with apicoectomies in elements 11, 12, and 13.

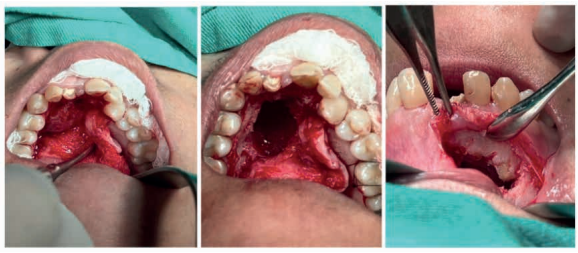

Figure 4: Retraction and removal of the palatal surgical flap.

Figures 5 and 6: Cystic cavity after enucleation and curettage.

After the pre-anesthetic consultation, with laboratory tests evaluated, the patient (ASA I) was fit to receive general anesthesia. After the procedure performed by the anesthesiologist for anesthetic induction and nasotracheal intubation, the surgery began, following the steps of facial antisepsis, application of surgical drapes, semi-technical maneuver to aspirate the interior of the lesion (obtaining citrus yellow liquid content as suggested in the initial evaluation), local anesthetic infiltration (nasopalatine, greater palatine on the right side, bilateral infraorbital, and infiltrative in the vestibular alveolar mucosa). Xylocaine 2% with adrenaline 1:100,000 was used. An intrasulcular palatine incision was made from the distal face of element 22 to the mesial face of element 16. Mucoperiosteal detachment was performed with the aim of preserving the nasopalatine nerve and fully exposing the palatine bone in that area. With the retraction and removal of the palatal surgical flap, the thin palatal bone wall was removed using piezoelectric ultrasound to gain access to the lesion capsule. With the lesion properly exposed, enucleation was performed with curettes to resect the lesion without rupturing its capsule, which could increase the chances of recurrence. The lesion was properly enucleated and resected with the surgical instrument (excisional biopsy), properly stored in a dry jar, and sent for anatomical and histopathological examination to obtain a final diagnosis.

The empty and completely clean surgical cavity was washed with 2 ampoules of gentamicin diluted in 100 ml of 0.9% NaCl. Next, a horizontal incision was made in the vestibular alveolar mucosa in the apical region of elements 11, 12, and 13, followed by mucoperiosteal detachment, exposing the root apexes of the aforementioned teeth. Using piezoelectric ultrasound and delicate tips, apicoectomy was performed in this region. The vestibular area was also washed thoroughly with 0.9% NaCl.

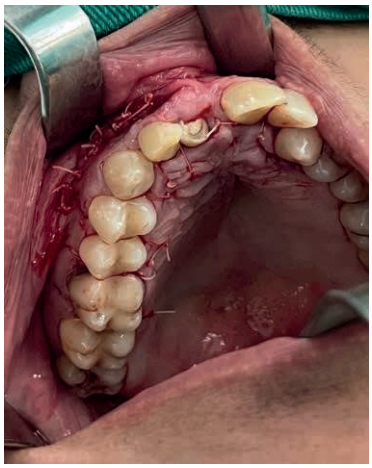

Figure 7: Final suture.

Finally, suturing of the palatal flap was started using simple interrupted stitches and horizontal suspension sutures for reinforcement. The vestibular region was sutured in two planes (muscular and mucosal) with simple interrupted stitches and U-shaped suspension stitches. All sutures were performed with absorbable Vicryl 5.0 thread. After discharge from the hospital, the patient took oral medication (antibiotic, anti-inflammatory, and analgesic) for a few days. At follow-up visits on days 12, 15, and 30, the patient showed good progress, reported no pain, and the healing pattern was satisfactory. The results of the anatomical and histopathological examinations confirmed the initial clinical suspicion, with a final diagnosis of radicular cyst.

DISCUSSION

This paper reports the case of a patient who presented with an inflammatory periapical cyst involving the anterior region of the maxilla. Radicular cysts are found at the apex of the root of a devitalized tooth, with a higher incidence in the maxillary region, as observed in the case described. Although the literature indicates a higher prevalence of periapical cysts in male patients (NEVILLE et al., 2016), the present case highlights that this condition can also affect women, reinforcing the need for clinical attention regardless of gender. The

following characteristics were observed in the clinical, imaging, and histopathological examinations: brown lesion, rubbery consistency, irregular shape, rough surface, extensive unilocular radiolucent lesion with precise boundaries in the palatal and apical regions of elements 11, 12, 13, and 14, dimensions of approximately 20 x 12 x 11 mm in size, which is compatible with long-standing radicular cysts not diagnosed early, as described by Monteiro et al. (2021).In cases of larger lesions, such as the one reported, clinical signs such as increased volume (swelling), tooth mobility, and even displacement of adjacent elements may be observed. Another important aspect of this case is the location of the lesion in the maxilla. Anatomically, the maxilla has a more porous and vascularized bone structure than the mandible, which favors the silent expansion of cystic lesions. Nevertheless, its close relationship with the maxillary sinus, especially in the posterior teeth region, can facilitate the spread of infectious or expansive processes without visible symptoms at first. For this reason, maxillary cysts often reach larger dimensions before being clinically detected. (DANTAS et al, 2022; ZORDAN, J. et al, 2023).

The treatment adopted was endodontic retreatment of the elements,11,12 and endodontic treatment of elements 13 and 14, with the epicenter of the cystic lesion being the root of element 12. Although a reduction in the lesion was observed after treatment at the institute, the patient still needed periodontal surgery due to the extent of the lesion. Therefore, the patient was referred to a hospital for consultation with an oral and maxillofacial surgeon for clinical evaluation, diagnosis, and further treatment. Therefore, the procedure designated for the possible inflammatory cyst was apicoectomies on elements 11, 12, and 13, surgical enucleation of the lesion associated with curettage of the residual bone cavity. This is the best therapeutic approach in cases of well-defined periapical cysts, as it allows complete removal of the cystic capsule, significantly reducing the risk of recurrence. Even so, complementary curettage aims to remove any remaining epithelium or granulation tissue, promoting better conditions for bone repair (MONTEIRO et al., 2021).

This case highlights the importance of an integrated approach that includes early diagnosis based on clinical and imaging studies, selection of the most appropriate surgical technique, rigorous postoperative monitoring, and patient education on the importance of infection control and oral health maintenance. Therapeutic success depends largely on the complete elimination of the pathological focus and adequate regeneration of the involved bone tissue. Furthermore, clinical and radiographic follow-up is essential, given that complete bone regeneration can take from 6 months to 2 years, depending on the extent of the lesion and the individual patient's response (MONTEIRO et al., 2021). In summary, extensive periapical cysts require special attention from the dental surgeon, especially regarding their anatomical location, possibility of silent expansion, and possible functional and aesthetic repercussions. An effective therapeutic solution requires a combination of technical knowledge, individualized surgical planning, and continuous clinical monitoring.

CONCLUSION

It is concluded that inflammatory radicular cysts are odontogenic lesions with a higher prevalence in the maxillary region, which can cause extensive bone expansion. Although they are more common in men, especially between the third and sixth decades of life, this report highlights its occurrence in a 55-year-old female patient with normal blood pressure. Although generally asymptomatic, the cyst can cause a feeling of pressure in the affected region due to the accumulation of fluid, as reported by the patient. Therefore, an accurate

diagnosis must be made through detailed clinical examinations, imaging tests, and histopathological analysis. Even without apparent pain, the patient had an extensive radiolucent lesion with significant bone changes, such as palatal expansion and fenestration of the vestibular cortex, involving multiple teeth that had previously undergone endodontic treatment.

The apicoectomy and complete enucleation of the lesion in elements 11, 12, and 13 allowed for effective surgical control, minimizing the risk of recurrence. This case reinforces the importance of individualized and, often, multidisciplinary planning, focusing on the preservation of anatomical structures, function, and aesthetics, promoting the predictable and safe restoration of the patient's oral health.

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