

Dentigerous and Periapical Cysts in Anatomic Continuity Mimicking an Adenomatoid Odontogenic Tumor

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Abstract

The aim of this study is to report a case of dentigerous cyst combined with a periapical cyst in anatomic continuity. The patient was a 46-year-old black male. During an extraoral exam, moderate swelling was observed on the hard palate in the region between the vital 22 and pre-molar's residual root. CT scan examination showed the same coloration of the surrounding tissue. The CT scan showed that the 13 was impacted, with a lesion suggestive of an adenomatoid odontogenic tumor or compound odontoma. An excisional biopsy was performed. The histopathological exam revealed two contiguous lesions: a dentigerous cyst from the tooth 13 and a periapical cyst from the root residuals of 24 and 25. The clinical and radiographic diagnoses were not enough to arrive at a correct diagnosis, although these findings. The histopathological examination showed two distinct lesions, which contributed to the correct diagnosis and treatment.

Keywords: *Odontogenic Cysts; Dentigerous Cyst; Periapical Cyst; Contiguous Lesions*

Introduction

Cysts are defined as a pathological cavity with liquid or gaseous content that are not caused by the accumulation of purulent exudate and may be, but are not necessarily, epithelially coated. When they are derived from the epithelium associated with the development of the dental organ, they are called odontogenic cysts [1-3].

The dentigerous cyst is a developmental odontogenic cyst that originates from the separation of the crown follicle from an unerupted tooth, and it is the most common cyst that affects the jaw region. They are usually small but can reach large proportions and do not usually present painful symptoms. The periapical cyst is an inflammatory odontogenic cyst associated with an inflammatory response of the body against long-term local aggression due to a pulpal infection. This condition is clinically asymptomatic but may result in swelling in the affected region [4-8].

Contiguous lesions are independent and have their own etiologies that are anatomically associated, which may cause difficulty in clinical and radiographic diagnosis, when the findings need to be interrelated. The objective of this study is to report a case in which the anatomical continuity of a dentigerous cyst and a periapical cyst of a residual root presented imaging resemblance suggestive of an adenomatoid odontogenic tumor or compound odontoma. An extensive surgical approach was performed, and the lesion on the surgical site was excised. Histopathologic examination was crucial to elucidate the case.

Case Report

History and Chief Complaint

A 43-year-old male patient with melanoderma attended the stomatology service complaining of swelling in the palate region. The extraoral examination showed no pain on palpation. Intraorally, moderate cortical palatal swelling of approximately 3 cm wide was observed, with firm consistency on palpation in the palatal region of the anterior maxilla involving tooth 22 (healthy) and the residual roots of 24 and 25. The oral mucosa had similar characteristics to the adjacent tissue, without alergic symptoms in the area. The patient presented a favorable health history and did not have any allergies to drugs and anesthetics or reactions to the instruments.

Complementary Exams

A CT scan was requested, in which the left upper canine was impacted with a pericoronary lesion with small radiopaque areas suggestive of adenomatoid odontogenic tumor or compound odontoma (Figure 1-3).



Figure 1: Cross section of the CT revealing left canine with lesion involving the dental crown with small radiopaque areas.



Figure 2: Transverse section of the CT with more clarity the lesion covering the crown of the impacted canine and the root remains.

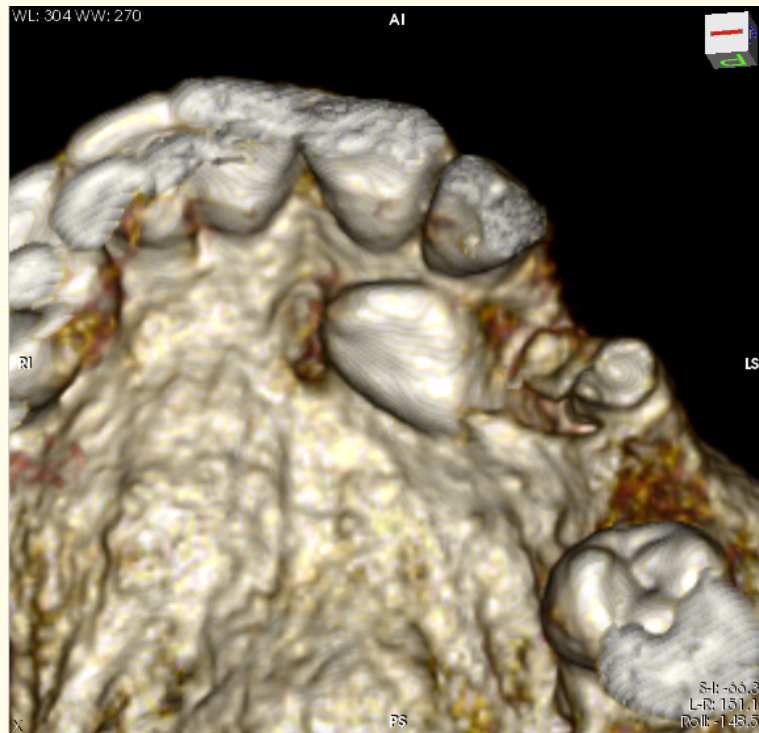


Figure 3: 3D occlusal CT image corresponding to the area of tumefaction on the hard palate, where bone rarefaction is observed near the impacted canine.

Surgical Approach

In surgery, the hard palate was partially detached to facilitate visualization of the operative field and to analyze the development and positioning of the impacted canine. After incision of the region and detachment, small foci of pediculated lesion associated with the impacted tooth were observed (Figure 4). The root and canine remains were extracted. In Q, a cystic cavity was noted with vestiges and some foci of the lesion (Figure 5). Macroscopically, fragments of soft tissue were visualized with elastic consistency and irregular shape and surface that were sometimes brownish or blackened and measured 60 x 50 mm together. The lesion was referred for histopathological examination.

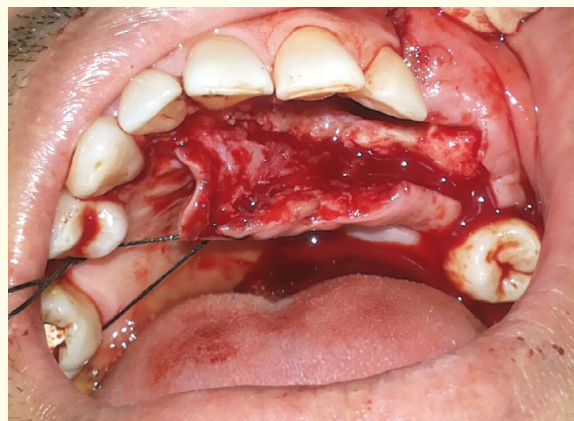


Figure 4: Partial detachment of the hard palate for visualization of lesion size and positioning of impacted canine.

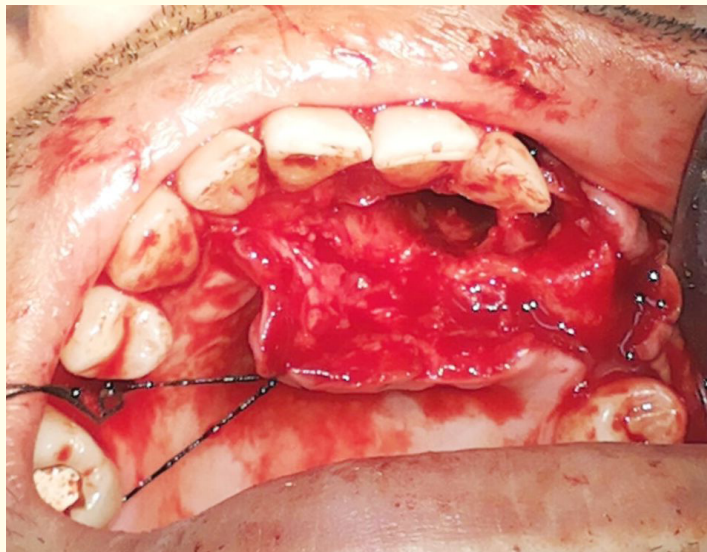


Figure 5: View of the cystic cavity with vestibule and foci of the lesion.

Histopathological Examination

Microscopic sections revealed a virtual cystic cavity lined by odontogenic epithelium with one- and three-cell layers. The fibrous connective capsule was dense with bundles of densely organized collagen fibers (Figure 6).

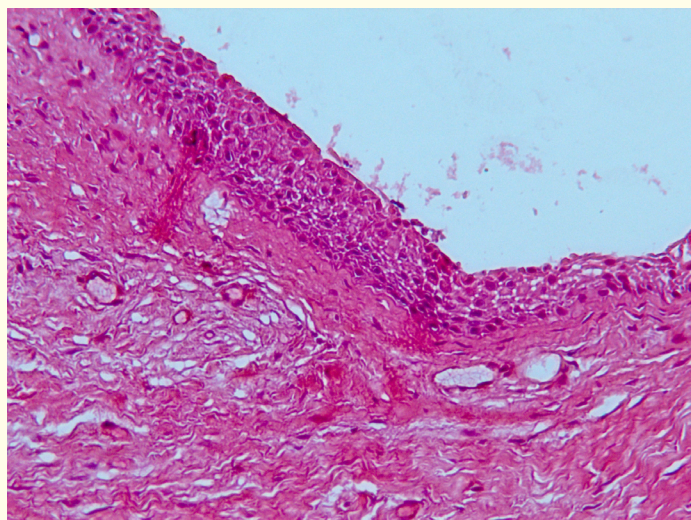


Figure 6: Histological section presenting odontogenic pavement epithelium lining the cystic cavity and cystic capsule with dense bundles of collagen fibers. Possessing characteristic of dentigerous cyst.

In other sections, the virtual cystic cavities were covered with hyperplastic odontogenic epithelium with exocytosis. Areas of predominantly mononuclear inflammatory infiltrate were observed, sometimes severe or discrete (Figure 7). Histopathological examination revealed two independent lesions: a dentigerous cyst and a periapical cyst.

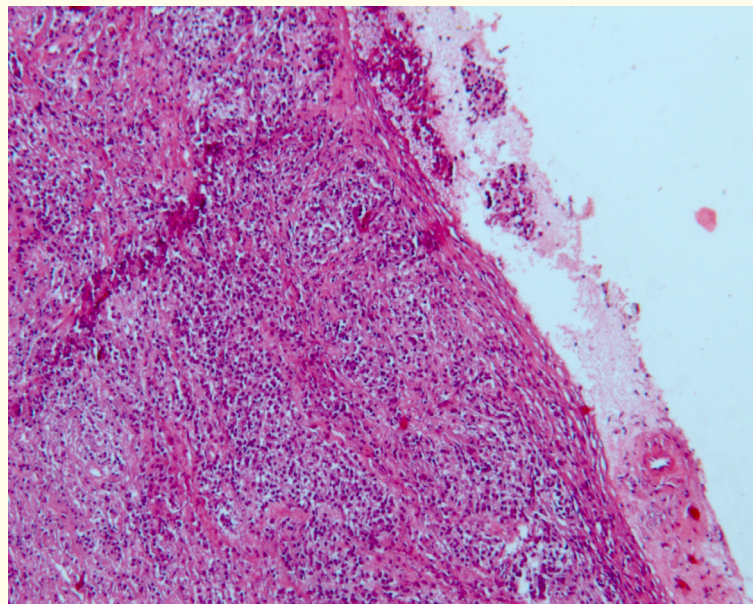


Figure 7: Histological section showing hyperplastic lining epithelium with intense inflammatory infiltrate in the cystic capsule. With appearance of periapical cyst.

Preservation

After 15 days of surgery, the patient appeared at the service without presenting intraoral bulging in the cortical palatine. There was no complaint of painful symptomatology or any discomfort in the region (Figure 8). About 7 months after the first preservation, computed tomography was ordered to analyze the region affected by the lesion, and no recurrence of the lesion was observed (Figure 9).



Figure 8: Healing after 15 days of surgery, with moderate inflammation in the region of incisor foramen.



Figure 9: Transverse section of computed tomography after 7 months of follow-up, indicating absence of lesion and effective treatment.

Discussion

The radiographic findings showed that the patient did not present the left superior canine in occlusion; it was impacted. This tooth had a long and complex path of eruption, from its formation site to its final eruption position [9]. In addition, the upper canines takes twice as long as its neighboring teeth to complete its eruption and therefore became more susceptible to change in the trajectory of eruption from odontogenesis to the establishment of normal occlusion. This may result in vestibular or palatal eruption or impaction [10]. The permanent maxillary canines, after the third molars, have the highest occurrence of impaction, especially in the palatal region, most of which occurs unilaterally, even in the presence of sufficient space for dental arch alignment, and is twice as common in women (1.17%) than in men (0.51%) [11]. The most common causes for dental impaction are local, and impaction is the result of one or a combination of the following factors: dental size, arch length discrepancy, prolonged retention or early loss of the deciduous canine, abnormal position of the dental germ, presence of an alveolar cleft, ankylosis, cystic or neoplastic formation, or root laceration [12].

The CT scan image also revealed a mixed radiolucent/radiopaque lesion involving the impacted canine, radiographically suggesting lesions such as adenomatoid odontogenic tumor (AOT), compound odontoma (CO), or calcifying odontogenic cyst (COC). Up to 75% of AOTs occur in the maxilla [13]. The tumor appears as a circumscribed, unilocular, radiolucent lesion involving the crown of an unerupted tooth, more often the canine, that is still confused with a dentigerous cyst, which is similar radiographically and also involves an impacted tooth [14,15]. The adenomatoid odontogenic tumor may appear to be completely radiolucent but often contains delicate calcifications [16]. A compound odontoma commonly appears radiographically as a collection of radiopaque structures, similar to teeth of varying sizes and shapes, surrounded by a variable radiolucent zone and often associated with an unerupted tooth [17]. A COC usually presents as a well-defined radiolucent, unilocular lesion with radiopaque structures within the lesion, presenting as irregular calcifications of radiographic density, similar to the surrounding bone, in about one third of the cases [18]. A COC is also usually associated with an unerupted tooth, most often the upper canine [19]. A dentigerous cyst is the most probable differential diagnosis in cases of upper canine impaction [20]. The radiographic diagnosis was confusing because it had apparently radiopaque structures that surgical and microscopic evaluation revealed to be only an overlap of anatomical structures, cortical bone, and trabeculae typical of the maxilla.

Clinically, the patient had approximately 3 cm of swelling of the left side of the palatine. Also, he had no symptomatology that could be similar to the findings of an AOT, which rarely exceeds 3 cm in diameter and is frequently asymptomatic [21]. The AOT usually affects young patients, often women, in the anterior portion of the maxilla. This patient profile does not apply perfectly to the present case [14,15]. Although a dentigerous cyst can be found in patients with a wide range of ages, they are more frequent between patients aged 10 and 30 years old, with a male preference, and is also an asymptomatic cyst that can reach considerable sizes, which could be clinically possible in the case [22]. CO was considered as a differential diagnosis because it is often asymptomatic and rarely exceeds 6 cm in length [23]. Most cases of COCs, when intraosseous, are diagnosed in the second and third decades of life, can measure between 2 and 4 cm, and are frequently asymptomatic [24].

The treatment of choice was excisional biopsy of the lesion and extraction of the impacted tooth and the residual roots. At the time of surgery, lesion foci were observed on the impacted canine crown, and after removal of the residual roots (24 and 25), two cystic cavities with lesion foci were associated with the removed dental elements. A histopathological examination was requested for a conclusive diagnosis.

The histopathological examination evidenced 2 distinct cystic lesions of odontogenic epithelial lining. The clinical and radiographic information of the cases as well as submission of all removed tissues (soft, dental, and bony) for microscopic evaluation was essential to the conclusion that the lesions were autonomous. The diagnostic conclusion could have been different if only the soft tissue was submitted and a complete description of the case was unavailable [25,26].

Periapical cysts mainly affect adults between the third and sixth decades of life, commonly in the maxilla, since dental caries and pulp necrosis occur frequently in this age group [27]. Clinically, a periapical cyst is an asymptomatic lesion and does not demonstrate clinical evidence of its presence while reaching considerable dimensions, causing expansion of the external cortical bone and a hard and painless swelling [28,29]. In the present case, the palatal swelling presented by the patient was not only derived from the periapical cyst but from its close proximity with the dentigerous cyst of the impacted upper canine.

Finally, in cases of extensive cystic lesions involving the anterior maxilla, it is possible for pulp necrosis or pathological alveolar bone fracture to occur [30]. The present report showed clinical and radiographic post-surgical follow-ups with complete bone repair and the absence of additional complications to the remaining tissues. The treatment for retained canines positioned horizontally on the palate usually consists of surgical removal [31]. However, enucleation of the cysts and removal of residual roots are also the treatment of choice [6,32].

Conclusion

The intimate anatomical proximity of different odontogenic cystic lesions can mimic other conditions. This case showed that clinical and radiographic information being provided by the professional as well as the submission of all removed tissues for microscopic evaluation is essential to the diagnosis process and leads to effective treatment.

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