EXTENSIVE PERIAPICAL CYST IN THE MAXILLARY SINUS

‘A CASE REPORT’

Authors
Bouguezzi Adel, DDS, Resident ¹ Souid Kawthar, DDS, Assistant Professor ²
Boudegga Souha, DDS, Professor ³ Boughzala Abdellatif, DDS, Professor ⁴

Email ID
dr-adel@live.fr

Address of the Institution
Department of Oral pathology, Oral surgery, University Hospital Farhat Hached, Sousse, TUNISIA
Introduction

The radicular cyst is the most frequent cyst found in the jaw (between 38% and 68% of all the jaw cysts). The prevalence of periapical cysts varies between 8.7% and 37.7% of chronic inflammatory periapical lesions. (1) It is not uncommon, to find periapical lesions to extend to the surrounding tissues and not limit themselves to the apex of the involved tooth. In the literature most cases of unusually large periapical lesions of odontogenic origin are found in the maxilla where the bone is spongy. (1) Because of the bone consistency, it is easier for the lesion to occupy bony space and expand. Lesions have been found to occupy the entire sinus and even the floor of the nasal cavity. (2)

Case report

A 38 year old male with no past medical history was referred to the department of Oral pathology, Oral surgery of University Hospital Farhat Hached-Sousse by a general dental practitioner for management of a painless swelling for six days in the left maxillary region with nasal obstruction. The patient had been treated with antibiotics as a case of chronic tooth abscess, but his complaints did not improve. Clinically, there was a well defined swelling with a smooth surface; the swelling was compressible on palpation which indicated a loss of integrity of buccal bone (Figure 1). On intraoral examination, the second premolar was decayed and nonvital. Also, external examination revealed that eye movements and visual acuities were normal. And according to the patient nasal air flow was decreased on the left side. There were no other abnormalities identified on clinical examination.

Radiographs (panoramic & CT Scan) revealed an osteolytic radiolucency well delineated around the roots of the left second premolar, the large lesion measured 5.5cm vertically and 3.5cm horizontally, and expanded the buccal cortical and displaced the Schneiderian membrane (Figures 2,3,4). From history, clinical and radiographic examinations, a provisional diagnosis of radicular cyst was made. It was decided to surgically enucleate the lesion under local anesthesia. Reflection of a mucoperiosteal flap, followed by removal of bone and exposure of the lesion membrane was carried out. Aspiration of the contents of the cystic lesion was a valuable diagnostic aid; it revealed a yellow semi-viscous fluid. The lesional wall was hypertrophic and adhered partly to the mucosa of the base of the maxillary sinus; therefore, the lesional mass was totally curetted to a maximum extent. Enucleation of the cystic lesion and extraction of the 25 with care of the wound and suturing were done (Figures 5 to 9). Enucleating biopsy of the periapical lesion was diagnosed histologically as radicular cyst with a layer of nonkeratinised stratified squamous epithelium (Figure 10). The healing was uneventful without swelling or other complications. Sutures were removed 1 week postoperatively, at the 8 months follow-up, no complications or recurrence were noticed with complete bone healing and repneumatization of the antrum (Figure 11).
Figure 1: Photograph of the patient’s oral cavity showing a decayed second premolar and a swelling at the premolar vestibular area.

Figure 2: Panoramic radiograph of the patient revealed an unusually large lesion invading the left maxillary sinus.
Figure 3: Axial CT image shows process destroying lateral wall of the left maxillary sinus

Figure 4: Computed tomography scan showing a cystic lesion occupying most of the left maxillary sinus
Figure 5: Trans-surgical view, note the marked lateral expansion of the lesion leading to loss of the lateral wall of the maxilla

Figure 6: Enucleation of the cyst
Figure 7: A view of the maxilla removal of the cyst

Figure 8: Hermetic suture
Figure 9: Enucleated cyst with the removed 25

Figure 10: A histological section of the lesion showing at the upper left the cholesterol crystal clefts (red arrows), the proliferative epithelium (black arrows), and the inflammation area (blue arrows) (Hematoxylin and Eosin)
Discussion

The etiopathogenesis of cysts is particularly controversial; the formation has been explained by diverse theories, such as epithelial colonization, epithelial cavitations or the formation of microabscesses. The first is based on the formation of an epithelialized fistulous tract up to the granuloma from a periapical abscess fistulized to the oral cavity; when the communication is closed, the epithelial cells have already fully colonized the abscess, epithelizing it and giving rise to a radicular cyst. In the theory of epithelial cavitation, accumulations of epithelial cells are created; those furthest from the connective tissue which feeds them are left without vascularization and undergo degeneration and necrosis, thus forming the central area of the cyst. The theory of microabscess formation is based on the degeneration of the connective tissue leading to the development of the cyst; the formation of a microabscess in the nucleus of the granuloma, with the presence of stimulated epithelial cells, would lead to their growth in an attempt to line the created cavity. (3)

The pathogenesis of cysts has been described in three phases. During the first phase, the epithelial cell rests of Malassez begin to proliferate as a direct result of the inflammation and influenced by bacterial antigens, the epidermal growth factors, metabolic and cellular mediators. In the second, a cavity is formed, lined by epithelium (according to the above described theories), and in the third phase the cyst grows, probably by osmosis. (1)

Radiographically, the radicular cyst is a unilocular radiolucent lesion with well-circumscribed sclerotic borders that are often radiopaque. The lesion is associated with the apex of the tooth and a diameter of at least 1 cm is postulated to be
necessary to differentiate it from that of a normal follicular space. (4)

Natkin and al. related radiographic lesion size to histological findings and concluded that with a radiographic lesion size of 200 mm² or larger, the incidence of cysts was almost 100%. (5)

Other odontogenic cysts like dentigerous cysts, odontogenic keratoceysts, and odontogenic tumors such as ameloblastoma, Pindborg tumor, odontogenic fibroma, and cementomas may share the same radiologic features as radicular cysts. Microscopic evaluation is necessary most of the time to define the type of lesion. (6)

Our specimen was diagnosed histologically as a radicular cyst with a layer of nonkeratinised stratified squamous epithelium, in fact all radicular cysts are lined partially or completely by nonkeratinized stratified squamous epithelium. Keratinization is seen in approximately 2% of cases, and when present orthokeratinization is more common than parakeratinization. (7)

When cysts are especially large, with maxillary sinus involvement as in our patient, the panoramic radiograph is often not of great aid. CT scans provide superior bony detail, allowing for the visualization of the size and extent of the lesion with determination of orbital or nasal invasion or involvement. Again, with larger lesions, it also aids in planning of a surgical approach. Mucoceles, retention cysts, and pseudocysts are also included in the differential diagnosis when a maxillary sinus cyst is visualized involving maxillary expansion; this is in addition to the array of radiolucent lesions mentioned above that can also be visualized on CT. (8)

The treatment of pariapical cysts are still under discussion and many professionals opt for a conservative treatment by means of endodontic. However, in large lesions the endodontic treatment alone is not efficient and it should be associated to a decompression or a marsupialization (indicated when cyst is in close proximity to vital structures and where there is significant risk of injury with enucleation) or even to enucleation and extraction of the associated tooth.

A large maxillary cyst may involve the whole sinus and can transmit pressure to the walls of the sinus; consequently, ophthalmologic and nasal symptoms may develop.

With extensive lesions, it is important to carefully plan the surgical approach. The choice of treatment may be determined by some factors such as the extension of the lesion, relation with noble structures, evolution, origin, clinical characteristic of the lesion, cooperation and systemic condition of the patient. (9)

Some authors suggested a nasal approach; however, in keeping with the law of gravity, it is reasonable to surmise that the content from maxillary cysts can be drained much more easily into the oral cavity. An oral vestibular approach is therefore more preferable than a nasal approach. (10-11)

**Conclusion**

It must be kept in mind that chronic periapical lesions (granuloma, cyst, and scar tissue) are usually asymptomatic and do not create soft tissue alterations. However, they can deteriorate, producing pain and fistulization. Dentists should be very careful on clinical examination and should not omit
any details. Before beginning any treatment a careful and complete clinical and radiographic examination is needed to supply all the required information. In extensive cases, radiography alone may not be sufficient to show the full extent of the lesions, and advanced imaging may be needed.

**References**


