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Giant follicular cyst with maxillary sinus and pterygomaxillary space extension



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BACKGROUND: Dentigerous, follicular, cysts are developmental odontogenic cysts of reduced adamantine epithelium origin, associated with an impacted tooth. They are the second most frequent cystic pathology after inflammatory cysts. Although the frequency of dentigerous cysts associated with upper third molars is far lower than the mandibular ones, their complications are nothing but ordinary. Most of the times asymptomatic, being discovered during routine x-ray examinations, maxillary follicular cysts can grow to important size, altering the position of adjacent teeth, producing osteolysis of the nearby bone structures, as well as infectious complications, antral and orbital pathology.

CASE REPORT: The present manuscript describes the clinical, radiological, pathological and therapeutical aspects of a giant follicular cyst with antral and pterygomaxillary extension, associated with an impacted upper third molar.

CONCLUSION: The most efficient treatment of maxillary follicular cysts consists in the surgical removal of the lesion along with the involved tooth. Complete excision is mandatory to prevent recurrence. Extension into adjacent structures might complicate the surgery Preoperative evaluation and rigorous planning are essential, especially in large-sized lesions. Pathological examination is outmost importance in order to exclude aggressive transformations.

KEY WORDS: Dentigerous follicular cyst, Maxillary sinus extension, Pterygomaxillary space

Background

Dentigerous, follicular, cysts are developmental odontogenic cysts of reduced adamantine epithelium origin, associated with an impacted tooth ¹. Mostly located in the mandible (70-75%), the involved teeth include third molars, canines, second bicuspids and sometimes supernumerary teeth ¹¹. The incidence peaks between second and fourth decade. They are exceptionally found in children, during primary dentition ².

Follicular cysts are osteolytic lesions characterized by greater growth, differentiation and degeneration potentials, compared to inflammatory root cysts ³. Those con-

nected to upper third molars can disrupt the neighbouring teeth and extend to maxillary sinus and adjacent anatomical structures, by progressive osteolysis of the maxillary bone walls ^{4,5}. The expansion of the cysts in the pterigomaxillary fossa, nasal cavity, ethmoidal sinus or orbit may induce serious morphological, functional, nervous or infectious complications ^{6,7}.

In this aticle, we present a case of a large-dimension follicular cyst associated with the upper third molar, extended to maxillary antrum and pterygomaxillary space.

Case report

A twenty-one years-old male presented to the Oral and Maxillofacial Department for pain and discomfort in the left infraorbital region, associated with recurrent episodes of unilateral nasal obstruction and ipsilateral serous-purulent rhinorrhea. The clinical examination showed facial symmetry along with a sensitivity during palpation of the left maxillary and ethmoidal sinus points. Except a fluctuant area of about 1 cm², no modification of the upper arch was detected intraorally. The orthopantomo-

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grapy revealed the presence of an impacted left upper third molar in a high, ectopical position along with radioopacity of the left maxillary sinus and bone resorbtion distal to the upper left second molar (Fig. 1). To complete the radiological examination, a cone beam computer tomography (CBCT) was performed. It revealed a



Fig. 1: Preoperative orthopantomography. Cystic lesion of the left maxilla and ectopically impacted upper third molar.

homogenous radiopaque lesion involving the whole left maxillary sinus, with osteolysis of the maxillary walls, extending posteriorly to the pterygomaxillary fossa and medially towards the nasal cavity and ethmoidal cells. The lesion was centered by the third molar (Fig. 2).

Under general anesthesia, the lesion, along with the impacted molar, had been removed via Caldwell-Luc approach. The patency of natural Highmore ostium was assesd. Due to the lack of bone in the posterior part of the alveolar ridge, two planes wound closure was applied in order to avoid oro-antral fistula.

The removed cystic lesion, inserted at the neck of the tooth 2.8., was estimated at 4 cm in the largest diameter. The microscopical examination confirmed the diagnosis of follicular cyst. Squamous nonkeratinized epithelium coated the cystic cavity that revealed a slim connective tissue wall and odontogenic epithelial debris (Fig. 3).

At 1-year follow-up the patient showed no functional disturbances of the sino-nasal complex despite the expansion of the left lateral and posterior wall. No inflammation of the sino-nasal mucosa had been present, revealing a good antral clearance (Fig. 4).



Fig. 2: Preoperative axial CBCT: A - extension of the lesion to the pterygomaxillary space. The arrow shows the ectopically impacted upper third molar; B – extension to the left maxillary antrum; C – extension to the left ethmoidal sinus.



Fig. 3: Histological findings, hematoxilin and eosin stain: A- original magnification x 100; B original magnification x200. Cystic wall lined with non-keratinized squamous epithelium with elongated, irregular and focally joined ridges (arrow). Under the epithelium, there is an inflammatory infiltrate with conglomeration tendency, being organized as a lymphoid pseudofollicle (arrow head).



Fig. 4: One year follow-up CBCT: A -coronal; B- axial. Normal expansion of the maxillary sinus, with no signs of residual inflammation of the underlining mucosa.

Discussions

The follicular sac of impacted third molar is without a doubt the cause of a vast array of inflammatory, cystic and tumoral pathologies. The latter ones are long-time asymptomatic, being accidentally discovered as a radiolucent lesion surrounding an impacted molar on a radiological examination, indicated for dental purposes. To be considered within normal limits, the radiotransparency surrounding an impacted third molar (follicular sac) should be under 3 mm in highest dimension ³. Pathology should be suspected when radiolucency is larger.

Follicular cysts developed in the upper arch must be rigorously investigated, due to adjacent anatomical structures damage. Cystic expansion in the maxillary sinus, with the consecutive obstruction of the ostium, leads to infectious complications ⁸, namely sinusitis, as we found in our case. Inflammatory reaction involved the ipsilateral ethmoidal cells, a possible way of extension. Infectious complications are frequent and may have variable forms, from peri-osseous abscesses to suppuration of deep spaces or even the orbit ⁹.

Although not modified in our case, facial symmetry can be affected by antero-lateral maxillary wall expansion ¹⁰. Orbital signs like epiphora, exophthalmia and diplopia could be present due to the expansion of the lesion at this level, displacing the orbital floor and/or lamina papiracea ¹¹⁻¹³.

Follicular cysts might affect adjacent teeth and their periodontium, causing malpositions, resorptions and mobility. The treatment of maxillary follicular cysts consists of enucleating the lesion together with the extraction of the involved tooth, either in general anesthesia or enhanced local anesthesia. Access should be large enough to allow complete excision of the lesion especially if it extends in the soft peri-maxillary tissues. Endoscopic surgical treatment can lower the rate of perioperative complications and is recommended in cases of orbital and paranasal sinuses extension ³. Cystotomy is seldom used in maxilla. It has more inconveniences than benefits (recurrence, necessity of surgical reintervention, infectious complications etc.). Cystotomy is rather used in case of mandibular cysts, where the risk of bone fracture and nervous damage can be avoided via this treatment option ¹⁴⁻¹⁶.

The pathological examination is mandatory. The importance resides in detection of mural ameloblastoma or even epidermoid carcinoma ¹⁷⁻¹⁸. Less documented in literature are cases of mucoepidermoid carcinomas developed from the epithelial wall of follicular cysts ¹⁹.

Conclusions

The most efficient treatment of maxillary follicular cysts consists in the surgical removal of the lesion along with the involved tooth. Complete excision is mandatory to prevent recurrence. Extension into adjacent structures might complicate the surgery Preoperative evaluation and rigorous planning are essential, especially in large-sized lesions. Pathological examination is outmost importance in order to exclude aggressive transformations.

Riassunto

Le cisti dentigene, follicolari, sono cisti odontogene di origine epiteliale da riduzione dello sviluppo adamantino, associate al dente affetto. Rappresentano la seconda patologia cistica più frequente dopo le cisti infiammatorie. Sebbene la frequenza delle cisti dentigene associate ai terzi molari superiori sia molto più bassa di quelle mandibolari, le loro complicanze sono ordinarie. Il più delle volte asintomatiche, essendo scoperte durante gli esami radiografici di routine, le cisti follicolari mascellari possono raggiungere dimensioni importanti, alterando la posizione dei denti adiacenti, producendo osteolisi delle strutture ossee vicine, nonché complicanze infettive, patologia sinusale e orbitale.

Qui si descrivono presentano gli aspetti clinici, radiologici, patologici e terapeutici di una cisti follicolare gigante con estensione antrale e pterigomaxillare, associata a un terzo molare superiore.

Il trattamento più efficace delle cisti follicolari mascellari consiste nella rimozione chirurgica della lesione insieme al dente interessato. L'escissione completa è obbligatoria per prevenire il ripetersi di uno sviluppo cistico. L'estensione in strutture adiacenti potrebbe complicare l'intervento chirurgico. La valutazione preoperatoria e una pianificazione rigorosa sono essenziali, specialmente nelle lesioni di grandi dimensioni. L'esame patologico è della massima importanza per escludere trasformazioni aggressive.

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