Surgical Resection of Odontogenic Inflammatory Maxillary Cyst: Case Report and Review of Literature

Sorina Cosma, Sorin Cimpean

1ENT department and maxillofacial surgery, CH Manchester Charleville-Mezieres, France
2General Surgery, CHU Saint Pieter, Brussels

*Corresponding Author: Sorina Cosma, ENT department and maxillofacial surgery, CH Manchester Charleville-Mezieres, France, E-mail: sorinacampean@yahoo.com

Received Date: May 30, 2018  Accepted Date: June 15, 2018  Published Date: June 22, 2018


Abstract

Background

Odontogenic inflammatory maxillary cysts constitute pathology for which clinical, radiological and evolutionary aspects are considerably polymorphic. For small cystic lesions non-surgical endodontic treatment is used. Larger lesions, however, have a natural tendency to grow and weaken the bone (as well as an inflammatory risk) may be treated by surgery.

Case presentation

We present a case report of surgical resection of a large maxillary cyst on a patient who previously had multiple dental extractions until complete edentation.

Conclusion

Great cystic maxillary lesions are relatively rare. A definitive diagnosis cannot be determined based on the history, clinical and radiographic evaluation. A correct pre-operative diagnosis is very difficult and can only be possible after histological examination.

Keywords: Dental-radicular cyst, Radiolucency, Maxilla, Enucleation

Background

Cystic lesions of the maxilla could be unilocular or multilocular, usually with well-defined sclerotic borders and can be cysts and tumors. According to the World Health Organization’s 1992 classification, the odontogenic cysts associated with inflammation are: the apical cyst, radicular cyst, residual cyst and paradental cyst [1,2,3].

On the etiopathogenic level, the radicular cysts are clinical entities belonging to the chronic line of periodontitis apical which derived from epithelium associated with the development of the dental apparatus [4].

The apical cyst is the most common cystic lesions of the maxillary and is more common after the first decade with a peak in the 3rd and 5th decades and a predilection in men. It is localized preferentially at the sector level of the maxillary anterior and at the level of molars [5,6,7]. The radicular cysts develop slowly and the patients do not experience pain unless acute inflammatory exacerbation is present. The growth rate has been estimated at about 5 mm per year [8]. The lesions are often detected only during routine radiographic examination. If the cyst does become large, symptoms such as swelling, mild sensitivity, tooth mobility and displacement may be observed. The affected tooth is non-responsive to thermal and electrical pulp tests [9].

The differential diagnosis should be made with all bone lesions with radiolucency.

Management of the odontogenic cyst is extraction of the impacted tooth and enucleation of cyst. In large cysts, first apply marsupialization to reduce size of the cyst. When cyst becomes of sufficiently small size, operation enucleation and tooth extraction could be considered [10,11].

Copyright: ©2018 Sorina Cosma, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
Case presentation

34 years-old male came to the Dental Service of our Hospital for dental care. The patient complains of a flow in the mouth and a painful swelling in the upper right gum.

The patient does not have a particular medical history.

The extra-oral examination has not shown a swelling or facial asymmetry and the intra-oral examination revealed a complete edentation following multiple dental removals. We found on palpation at the level of the upper right vestibule a depressible swelling, not very sensitive, with approximately 2 cm. The overlying mucosa was intact, normal in colour. The examination of the right nasal cavity does not find any lesions or swelling at the floor.

The laboratory exams didn’t find any deviation from normal ranges.

A panoramic radiography shows an ovoid well defined with osteosclerotic border radiolucent lesion on the right maxilla extending from 21 up to 22 and measuring approximately 2 cm in diameter (Figure 1). The cystic lesion does not cross the floor of the nasal cavity and we see also the teeth in bad health with granulomas and root level infection. The CT scan reveals a cyst that measures 20 x 18 mm, with a regular contour and liquid content, located at the level of the alveolus maxilla teeth 21 and 22 (Figure 2).

Figure 1: The radiographic image of the right maxillary cyst

Surgical treatment

The patient underwent a surgical treatment. The intervention was done under general anesthesia. Xylocaine 1% adrenaline is infiltrated at the level of the upper right gum. We practiced Newman’s trapezoid flap in the gingival mucosa (Figure 3). We roughen the mucosa and we came across a whitish flow. A sample for bacteriological exam was taken. We removed all the mucosa that caps the cystic cavity. Bone continuity exists neither with the nasal cavities nor with the palate (Figure 4). We place the hemostatic dressing in the cavity. The gingival mucosa was closed with resorbable stitches. The hemostasis was satisfactory (Figure 5).

Figure 3: Intraoperative image with open cystic cavity.

Figure 4: All the cystic mucosa was removed.

Figure 5: Closing the mucosal flap
Postoperative course
The post-operative course was marked by a swelling of the right hemi-face which disappeared in a few days after the application of cold compresses. The medical treatment consisted in mouthwash, analgesic and general spectrum antibiotic like beta-lactam class. The culture of the liquid in the cyst found Streptococcus constellatus sensitive to the antibiotic already administered.

The patient was discharged from the hospital on the 1st post-operative day. Three months later the clinical control found a good healing gum and the control radiography found the cystic cavity beginning to fill with bone (Figure 6).

Figure 6: Radiographic appearance at 3 months postoperative

Anatomo-pathological results
The histopathologic exam shows appearance consistent with an apico-dental cyst and the absence of any atypical character.

Discussion
A wide variety of cysts and neoplasms may occur in the maxillofacial region. The most important of these are maxillary cysts [12]. Growth of a cyst is typically slow, centrifugal and infiltrative [13]. Radicular cysts are thought to arise from epithelial cell rests of Malassez in the periodontal ligament, and they are believed to proliferate as a result of periapical inflammation caused by infection of the root canal system. They are particularly frequent in the maxillary anterior region, presumably as a result of trauma [14].

The impossibility of distinguishing a cyst from a granuloma led the researchers to perform statistics from postoperative pathological examinations. The results showed that the percentage of cyst ranged from 6 to 55% [15].

The cyst may displace adjacent teeth or cause mild root resorption. Radicular cysts and periapical granulomas have a similar radiographic appearance [16]. The radiological assessment must assess the relationship of the cyst with the causal tooth(s), but also with the neighboring teeth, the possible rhizalyses and the relations with the neighboring organs: nasal fossae, maxillary sinus, pterygomaxillary fossa [17].

Clinical findings
The odontogenic inflammatory cysts may be asymptomatic, the discovery is fortuitous on the occasion of a routine radiographic examination, or the clinical signs related to the expansion of the cyst and the dental displacements it causes are confused with the others odontogenic tumors [18]. If the cyst does become large, symptoms such as swelling, mild sensitivity, tooth mobility and displacement may be observed [19]. During their evolution, the radiculodental cysts, go through 4 stages: latency phase, deformation phase, externalization phase, fistulization phase [20,21].

Differential diagnosis
The differential diagnosis of the radicular cysts should include dentigerous cyst [DC], pindborg tumor, periapical cementoma, traumatic bone cyst, ameloblastoma, odontogenic keratocyst and odontogenic fibroma [22]. Occasionally mucoepidermoid carcinoma arising from mucous cells within the cyst walls and squamous cell carcinoma [23]. In addition to the histopathologic differences between the feature of the epithelium of OIC and DC, the differential diagnosis can also include the development and the recurrence tendency of these cysts. Recently, researches showed mutation of PTCH gene and over activation of Shh signaling may be associated with the clinic pathological expression of OKC [24].

Diagnosis
The odontogenic tumor pathology of the facial mass is dominated by maxillary cysts mild [25]. According to the World Health Organization’s 1992 classification, odontogenic cysts include the apical cyst, lateroradicular cyst, residual cyst, and paradental cyst.

Sometimes an orientation of diagnostic depending on: the appearance of the lesion [lytic, condensing, with bone formation, etc.], its limited character or not, the presence or absence of calcification, the seat [maxillary, mandibular, angle, toothed portion, condyle, etc.], relationships with adjacent dental apices [displacement, lysis, etc.], the possible presence of included teeth and previous traumas [26].

On the radiological level, the radiculodental cyst is presented by a unilocular radiolucent image at the apex of a mortified tooth [27,28]. The scanner allows the study of maxillary cysts by appreciating their volume and the anatomical surrounding zones [29]. According to Hisatomi et al, MRI is the only examination that can differentiate a non-cystic tumor (polymorphous adenoma, fibroids, granuloma) of a cystic tumor [30]. Histologically, a dental radicular cyst is defined by different components [31,32].

Treatment options
The major maxillary cysts, have one thing in common: surgical treatment [33]. The best therapeutic action is the enucleation of the lesion with anatomopathological examination of the entire excision piece. Surgery under general anesthesia is first-line in the treatment of large maxillary cysts.

Marsupialization is a surgical technique that can serve as a preamble to the excision of some cysts with fluid content. Suzuki treated 97 cases of various maxillary cysts by the irrigation

method [34]. Cryotherapy is used in addition to surgery after enucleation of the cyst [35].

The recommended treatment option available for radicular cyst is the conventional endodontic approach combined with decompression or surgical enucleation of a cyst with extraction of the offending tooth [36,37]. In large lesions the endodontic treatment alone is not efficient and it should be associated with a decompression or a marsupialisation or even with enucleation [38,39]. When the lesion is small with approximately 1 cm in diameter, most clinicians opt for conventional endodontic treatment [40]. Few studies are of the opinion that regenerative techniques are not superior, either with regard to the speed or quality of healing [41,42].

Post-operative complications

Like any surgery, bleeding and infection are possible. There is specific complication too. The fracture of the mandibular angle is usually due to the presence of a bulky cyst weakening this angle. The nerve injuries mainly concern the V3, lingual and mental nerves. The communication between the mouth and the sinus is due to a rupture of the sinus membrane. The way to go is to set up hemostatic procedures with waterproof closure by pedicle flap displaced coronally possibly with the use of the adipose mass of the face for syssarcoplasty [43,44].

Our course of action

The therapeutic decision was to perform the enucleation of the cyst under general anesthesia. Because the patient presented complete edentation he didn’t need an apical treatment, which left us to perform the enucleation of the cyst. The enucleation was chosen as a surgical technique because of the size of the cyst. The patient, being young and with dental problems for a long time, needed a radical treatment and benefited from explanations about the time to heal the remaining cavity in the bone. He needed a denture pretty soon, not only for aesthetic reasons but especially to be able to feed himself.

Conclusion

The great cystic maxillary lesions are relatively rare. A definitive diagnosis cannot be determined based on the history, clinical and radiographic evaluation. The correct diagnose can be possible only after histological examination. In the case reported here a decrease in the radiolucent area was already observed at 3 months after the surgery.

References


18. George R, Donald PM, Sabarinath B. Calculifying cystic


