

CYSTIC DECOMPRESSION AS TREATMENT FOR EXTENSIVE MAXILLARY BONE INJURIES: A CASE REPORT

PEDRO THALLES BERNARDO DE CARVALHO NOGUEIRA¹, LUCIANO SCHWARTZ LESSA FILHO², RODOLPHO FERREIRA LIMA VILELA^{3*}, STEFANNIE LOPES DE FREITAS⁴, JOÃO AUGUSTO GOULART FILHO⁵, FABIANA SOPHIA GONZALEZ DA NOBREGA⁶

1. Professor PHD, Centro Universitário Tiradentes (UNIT- AL), Maceió, AL, Brazil; 2. Professor PHD, Centro Universitário Tiradentes (UNIT- AL), Maceió, AL, Brazil; 3. Dentist, Maceió, AL, Brazil; 4. Dentist, Maceió, AL, Brazil; 5. Professor, Centro Universitário Tiradentes (UNIT- AL), Maceió, AL, Brazil; 6. Professor at the Federal University of Alagoas UFAL.

* Rua: José Freire Moura, 1313, Maceió, Alagoas, Brazil. CEP: 57035-110. rodolphovilela@gmail.com

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ABSTRACT

Dentigerous cysts occur in the first three decades of life with slow and asymptomatic growth and can reach large size and cause facial deformity, impaction and displacement of adjacent teeth and / or structures. However, there are treatments that are used to avoid such circumstances. Decompression is a method that has efficacy in reducing the size of the cystic lesions and in the morbidity of the resection, it's a technique that removes the pressure inside the lesion. The treatment of cysts of large extensions in the maxillofacial region does not yet have a pattern, and may use one or more treatments simultaneously or sequentially. The present paper presents a case report treated through the decompression technique as well as a discussion about the treatment modalities for odontogenic cysts.

KEYWORDS: Decompression, mandible, cysts.

1. INTRODUCTION

Cysts are pathological cavities filled by fluid or semi-solid contents and covered by epithelium. Frequently, dentists are faced with odontogenic cysts, with dentigerous cyst being the most prevalent after root cyst, occurring in 20% of cases of cystic lesions in maxillary bones. They can be found in a wide age range, have a slight male predilection and affect more leukoderma individuals compared to meloderma. Its pathophysiology remains uncertain but its development is believed to be associated with the accumulation of fluid between the reduced enamel epithelium and the crown of an unbroken tooth, creating a cavity that continuously grows by osmotic pressure over a long period of time, in which the tooth remains unbroken^{1,2,3,4}.

Small dentigerous cysts are usually asymptomatic, being diagnosed through radiographic examinations to establish the lack of eruption of a dental element. Extensive cysts may be associated with bone expansion with painful

symptomatology, which may result in facial asymmetry^{2,3,4,5}.

Radiographically, in most cases, small dentigerous cysts have a unilocular, radiolucent cavity, with well-defined sclerotic borders, associated to the crown of an even tooth. Extensive dentigerous cysts may have multilocular aspects due to the influence of bone trabeculation within the cystic cavity, in the process of resorption during lesion growth^{3,4,6,7,8}.

The histological characteristics of a dentigerous cyst may be variable. It usually has a capsule composed of two or three layers of flattened, nonkeratinized epithelial cells, and may have inactive dental epithelial remains^{1,2,3,4,9}.

The most commonly used treatment for small lesions without proximity to important anatomical structures is enucleation, which consists of the removal of the entire cystic lesion. Decompression techniques, such as marsupialization and decompression, are widely used with the aim of reducing lesion extension, prior to the enucleation. The prognosis for the dentigerous cyst is favorable, with relapse rates around 3.7% of the cases^{2,3,4,9,10,11}.

2. CASE REPORT

A pediatric Patient, 13 years old, male, leucoderma, consulted the department of Oral and Maxillofacial Surgery of Arthur Ramos Memorial Hospital in Maceió, Brazil, for the evaluation and assessment of an increase in volume in the right mandibular body. During the anamnesis it was reported that the swelling had been present for about 6 months without painful symptomatology.

The extraoral examination revealed a slight increase in volume in the mandibular left region. On the panoramic radiography (Figure 1) and computed tomography, a well delimited radiolucent / hypodense zone in the left mandibular body, involving the roots of the elements 36 and 37 and associated with the crown of the included element 38, was observed.

An incisional biopsy was made under general anesthesia, together with an aspiration puncture, which confirmed the cystic nature of the lesion and a rigid device was placed to perform the decompression (Figure 2).



Figure 1. Pre-operative panoramic radiography.



Figure 2. Rigid device installed.

The patient received routine postoperative instructions and was also instructed to hygienize the device three times daily with 0.9% saline solution through a 10 ml syringe, helping in the cleaning and the maintenance of the communication between the cyst cavity and the oral cavity and preventing focus of infection.

Histological sections stained with hematoxylin and eosin revealed the presence of an odontogenic cystic lesion composed of an epithelium containing 2 to 4 layers of cells similar to those of the dental follicle, as well as points of exocytosis. The cystic capsule was formed by loose connective tissue containing numerous small caliber vessels. A predominantly lymphoplasmacytic inflammatory infiltrate was observed, ranging from mild to severe. Russel corpuscles and trabecular bone fragments completed the histological picture. The microscopic findings were compatible with a dentigerous cyst, showing areas of chronic inflammation (Figure 3). After histological analysis, the decompression therapy was maintained.

During a 9-month period, the patient underwent follow-up care and there were no interurrences in the post-operative period. Panoramic radiography prior to enucleation revealed a decrease of 80% of the size of the cysts and complete bone neoformation in the region (Figure 4). The patient continues to be assisted without signs of recurrence of the lesion or complaints. He will be submitted to a second surgical procedure to remove the third molar associated with the enucleation.

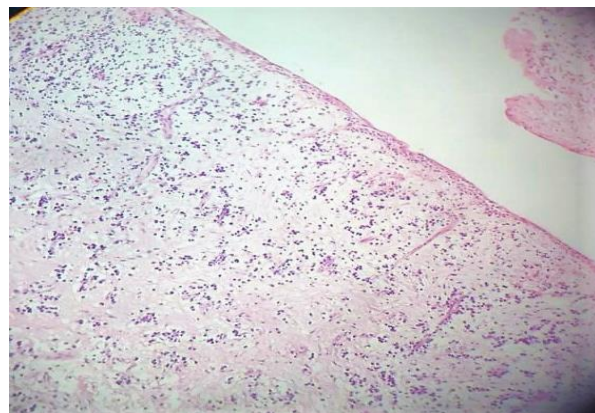


Figure 3. Histological section stained with hematoxylin and eosin.



Figure 4. Post-operative panoramic examination

3. DISCUSSION

Small cysts are usually treated by enucleation and curettage. However, the treatment of large cysts in the maxillofacial region does not have a standard treatment yet^{1,11,12}. The treatment of large odontogenic cysts by aggressive surgical techniques leads to the risk of damage of anatomical adjacent structures, such as the inferior alveolar canal, the maxillary sinus and the nasal cavity. The complete enucleation of large lesions can lead to complications such as mandibular fracture, mandibular continuity defect, maxillary sinusitis, oro-antral and oro-nasal fistulas, and sensorineural deficit of infraorbital or inferior alveolar nerves^{11,12}.

The clinical case reported indorses the findings of the authors mentioned above, where a well delimited and extensively radioluced/ hypodense zone can be seen in the right mandibular body, involving the mandibular canal and the roots of the elements 36 and 37, associated with the crown of the element 38.

Conservative treatment methods such as decompression and marsupialization are considered as the first option for large odontogenic cysts treatment. Decompression of a cyst is defined as a technique that eliminates pressure within the cyst¹³. The main advantages of this conservative method of treatment are low morbidity, absence of serious complications such as infection and pathological fractures and the possibility of preservation of bone and important anatomical structures^{14,15,16}.

The marsupialization is a decompression technique where an opening is made on the cyst wall, which decreases the osmotic pressure within the cavity, resulting in a decrease in the liberation of fibroblastes resorptive factors¹³. The major disadvantage of this technique is the maintaining of the patency of the opening made in the cyst, when performed minimally, may be covered by epithelium. In order to lessen this disadvantage, a larger window can be made, which can create problems in the primary closure by leaving a residual defect in the mucosa¹⁴.

In the decompression technique, a rigid device is inserted and sutured to the margins of the cystic cavity, as done in the clinical report, where a 1 ml syringe was coupled to the opening of the cystic cavity to initiate decompression as shown in illustration (Figure 5). The disadvantages of this conservative treatment technique are the long periods of healing and discomfort of the patient due to decompression devices^{10,16}.

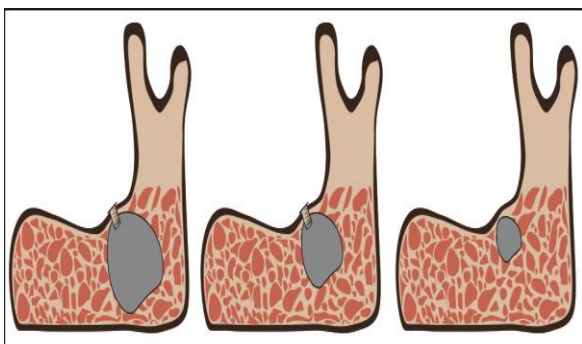


Figure 5. Rigid device and decreased cyst.

The percentage of reduction varies according to each type of cyst. In studies made by Gao *et al.* evaluating the decompression of 32 cysts and odontogenic tumors in the mandible, satisfactory results were found. After a period of three to nine months, odontogenic tumors decreased 79.6% and dentigerous cysts showed a reduction of 78.9% on their size, after the decompression⁹.

In the results found by Song *et al.*, it was concluded that the volume reduction rate is related to the original

size of the lesion. Although there is need for a secondary surgical intervention, decompression is a beneficial technique for reducing the size of extensive lesions¹⁷.

In the present case, 9 months after the insertion of the rigid decompression device, it was possible to observe, by monthly panoramic radiographies, reduction of approximately 80% of the size of the lesion, in addition to radiographic findings related with bone neoformation.

Large cystic lesions, as in the case reported, are necessarily treated in a hospital setting under general anesthesia. After decompression, the reduction of the lesion size will allow a second surgical intervention, for the enucleation, to be performed at the ambulatory level, under local anesthesia, minimizing patient risk.

4. CONCLUSION

Some factors are determinant for the choice of therapy that indicates a better prognosis for the patient. Cyst size is a critical factor in treatment planning. Small cysts can be easily enucleated and submitted to histopathological examination through an excisional biopsy. In cases of large cysts or cysts that are very close to vital structures, techniques such as decompression and marsupialization should be considered for the reduction of the lesion, creating an adjacent bone neoformation before being submitted to posterior surgical enucleation. The age of the patient should also be taken into consideration. Children with extensive cysts, where dental germs can be damaged if they are enucleated, may require an initial decompression phase. In this case, we can observe that decompression is an effective and viable method for large cystic lesions.

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