

# CISTO RADICULAR GIGANTE EM MAXILA: RELATO DE CASO

## GIANT MAXILLARY RADICULAR CYST: CASE REPORT

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### ABSTRACT

The radicular cyst is the most common maxillary inflammatory odontogenic cyst. It has predilection for the anterior region of the maxilla and its occurrence is more frequent in males between the third and the sixth decade. As literature shows few cases of large radicular cysts causing facial asymmetry, this paper aims to document a successful case of definitive treatment by surgical enucleation of a giant radicular cyst in the anterior region of the maxilla. Adult male patient noticed increased volume in the anterior region of the right maxilla, with symptoms, mobility in dental units 11 and 21 and evolution of approximately one year. The panoramic radiography showed an unilocular radiolucent image with oval appearance lined by a discreet radiopaque halo extending to the apex of teeth 11, 12, 13, 21, and 22, suggesting a radicular cyst. Total excision of the lesion and curettage was performed under general anesthesia, and histopathological examination confirmed the diagnosis of the radicular cyst. The patient is under follow-up by the team without any possible expectations of lesion recurrence. The proliferation and activation of epithelial cell rests of Malassez induced by dental caries explains the origin of this cyst. Radicular cysts of large proportions are rare and its growth is due to bone reabsorption and cortical expansion, which can reach noble facial areas and cause asymmetries. The primary treatment of large cysts is enucleation and endodontic treatment of the involved teeth.

**UNITERMS:** Radicular Cyst; Pathology Oral; Surgery Oral.

### INTRODUCTION

Radicular cysts (RC) are the most common maxillary inflammatory odontogenic cysts<sup>1</sup>. They grow at the apical region of non-vital teeth and have predilection for the anterior region of the maxilla. However, they can be found in less frequency at superior molars region and at anterior and posterior region of the jaw<sup>1,2</sup>.

The occurrence of RC is higher in males around 53%<sup>3</sup> and in patients between third and sixth decade of life. The low prevalence of this lesion in the first decade is interesting since dental caries is much more frequent among young patients than other age groups<sup>4</sup>.

The absence of pulp vitality is a fundamental condition of the radicular cyst diagnosis<sup>2,3,4</sup>. Several theories were proposed about the origin of RC. The most accepted one is about the proliferation of epithelial cell rests of Malassez induced by inflammatory reactions of pulp and bacterial contamination of root canal<sup>4,5,6</sup>.

Because of chemical mediators of inflammation from bacterial metabolism, the epithelial proliferation

and activation can be presented in a disordered way increasing the epithelial mass by continuous peripheral cell division. Capillaries and connective tissue fluids supply peripheral cells in division while central cells, in lack of nutrition, necrotic by liquefaction, resulting to form a cavity with fluid lined by an epithelium<sup>5,6,7</sup>.

Radicular cysts are normally found beyond routine imaging tests because they have a slow and silent growing<sup>2,3</sup>. Nevertheless, they can be presented in large proportions causing cortical bone bulging, mobility in adjacent teeth and displacement of some adjacent teeth, which may be one of the first clinical signs of the lesion<sup>2,3,4</sup>.

The radiographic aspect of RC is an intra-osseous unilocular radiolucent image, circling the apex of one or a group of teeth. When this lesion is small, it presents as a sclerotic margin; however, as it is growing, it may not have an apparent radiopaque halo<sup>3,7</sup>.

Due to the focus of infection, the primary treatment for root cysts is endodontic treatment to aim to regress the lesion. Nevertheless, this treatment

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is not efficient in many times, making necessary a definitive and aggressive approach such as cystic enucleation associated to surgical endodontic therapy<sup>1,6</sup>.

As literature shows few cases of large radicular cysts causing facial asymmetry, this case report aims to document a successful case of definitive treatment by surgical enucleation of a giant radicular cyst in the anterior region of maxilla.

## CASE REPORT

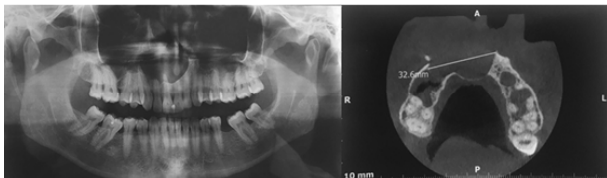
A 50-years-old male patient went to the Oral and Maxillofacial Surgery Service of Universidade Federal da Bahia (UFBA) referring pain and volume increase in anterior region of right maxilla with one-year evolution approximately.

During anamnesis, the patient revealed cardiac insufficiency and diabetes and denied medical allergies, smoking and alcoholism. Clinical exam revealed a discreet facial asymmetry at the right side, a bulging in the anterior region of the maxilla, mobility of teeth 11 and 21 (with access to the pulp chamber, but no endodontic treatment), and moderate pain to palpation and chew (Figure 1).



**Figure 1** - Preoperative extra oral view: nasogenian sulcus discreet deletion and prominent nasal wing elevation. Preoperative intra oral view: maxillary vestibular cortical bone expansion.

The panoramic radiography showed an unilocular radiolucent image with oval appearance lined by a discreet radiopaque halo extending to the apex of teeth 11, 12, 13, 21, and 22, suggesting a radicular cyst. The Cone-Beam Computed Tomography showed the presence of a cystic formation with 3,2cm size on its largest axis, regular contours and partially defined limits, close to the nasal fossa floor and wall of the maxillary sinus (Figure 2).



**Figure 2** - Preoperative panoramic radiography. Axial tomographic cut. Image suggests a compressive effect from the lesion to the right nasal fossa.

According to clinical characteristics and image tests, the diagnostic hypothesis was radicular cyst and the proposed treatment was enucleation and endodontics of the involved teeth.

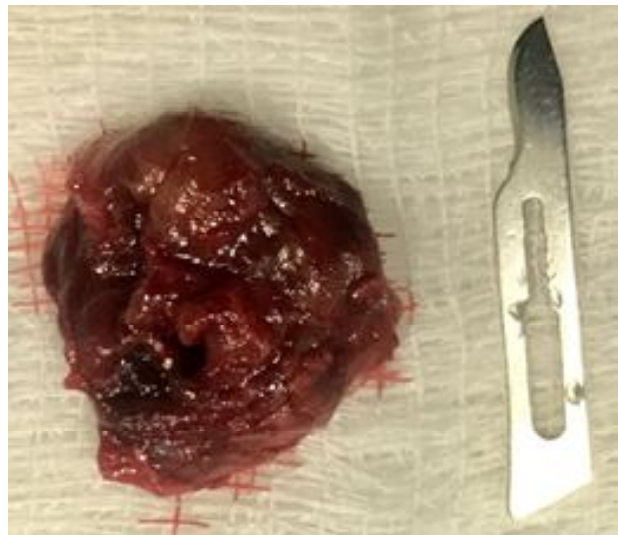
The surgical procedure was done by general anesthesia and orotracheal intubation and local anesthesia by infra orbital, nasopalatine and middle upper alveolar nerve block. A modified Newmann incision was chosen extending distally from the tooth 15 and a relaxing incision was performed at distal surface of the tooth 23. After mucoperiosteal detachment, a thin vestibular cortical bone was exposed showing a lesion with vascularized aspect. Surgical enucleation was performed with vigorous curettage of the root apices linked to the cyst, store cyst cleaning, and replacement of the flap for suturing (Figure 3).



**Figure 3** - Intraoperative aspect of cystic lesion with bluish color suggesting a vascularized lesion. Bone storage after enucleation and curettage. Suture after surgery.

There was no intercurrent during the two hours of surgical procedure. The patient was discharged after 24 hours and received orientations about dense and homogeneous diet, normal hygiene of oral cavity and medication use at home: antibiotic, analgesic, non-steroidal anti-inflammatory, and antiseptic mouthwash. Also, he was referred to endodontic treatment of teeth 11 and 21.

The enucleated lesion was added to a vial with 10% formalin and sent to histopathological analysis (Figure 4).



**Figure 4** - Enucleated lesion size.

Macroscopic examination showed an irregular portion with mucus-brownish-blackish aspect measuring 2,5 x 2,5 x 1,5 cm. Microscopic examination showed a fibrous wall cystic structure lined by stratified squamous epithelium, which was

atrophic on one time by simple cuboidal epithelium and, on the other time, by pseudostratified epithelium with mucosal and goblet cells. In addition, a granulation tissue, a striking chronic inflammation, cholesterol clefts, a foreign body-type giant cell reaction, and frequent bleeding outbreaks were also found. Because of these findings, the anatomopathological diagnosis was radicular cyst.

## RESULTS

A postoperative of 30 days showed a considerable swelling reduction, an excellent mucosal healing, and a considerable reduction of nasal wing elevation (Figure 5). The patient is under follow-up by the team without any possible expectations of lesion recurrence.



Figure 5 - 30 days postoperative

## DISCUSSION

Radicular cysts are the most common inflammatory cysts of oral cavity<sup>3</sup> and they are also called periapical cyst or periodontal cyst<sup>4</sup>. In radiographic exam, they are presented with oval or round radiolucent shape, but they are not always accompanied of a defined radiopaque cortical.

Clinical-radiographic characteristics of root cysts are widespread. However, when they reach larger sizes, they are quite similar to other cystic and tumor pathologies, which can be considered as differential diagnosis: ameloblastoma, odontogenic keratocyst, central giant cell granuloma, adenomatoid odontogenic tumor (AOT), and odontogenic fibroma<sup>1</sup>.

Maia et al<sup>9</sup> showed that aggressive lesions such as AOT can simulate a radicular cyst. Moreover, literature indicates metastatic and malignant pathologies that are masked in periapical cyst such as the clear-cell carcinoma<sup>10</sup>. Nevertheless, cysts and tumors that make differential diagnosis with periapical cyst have a vital tooth related to the lesion<sup>9,10</sup> and the fundamental characteristic to inflammatory cyst happen is pulp vitality absence<sup>3</sup>.

Although clinical-radiographic diagnosis is important, the histopathological report is overpowering for the definitive diagnosis, especially to choose more invasive treatment in order to avoid recurrences.

Most odontogenic cysts are asymptomatic in early stage, but the cortical becomes thin and rarefied as it is expanding, which leads to swelling that is soft

or rigid to palpation<sup>9,10</sup>. At this stage, the cyst can be presented with blue color suggesting a vascularized lesion<sup>10</sup> as it was observed in intraoperative of this case, which was proven by the bleeding outbreaks from the anatomopathological report.

The epithelium morphological appearance of radicular cyst is atrophic stratified squamous with moderate to large inflammatory infiltrate and cholesterol crystals<sup>1</sup>. Those characteristics were compatible with our report. In rare situations, the cyst can present a pseudostratified ciliated cylindrical epithelium (like the respiratory type) or a simple epithelium formed by goblet cuboidal cells (from digestive tract)<sup>3</sup>. The main epithelium type depends on the proximity from the lesion to the oral or nasal cavity<sup>11</sup>. We found an epithelium with mixed cells: simple cuboidal cells and mucosal-goblet cells (digestive tract), showing an uncommon aspect related to our radicular cyst.

It is crucial to inform that all information about root cyst described in here are rather similar to the nasopalatine duct cyst (NPDC): anterior region of maxilla, unilocular radiolucent radiographic aspect, volume increase discreetly deleting nasogenian sulcus, pain to palpation, and similar anatomopathological characteristics (epithelial lining can vary between non-keratinized stratified squamous epithelium, columnar pseudostratified epithelium, simple columnar epithelium, or cuboidal epithelium). It suggests a radicular cyst differential diagnosis with the nasopalatine duct cyst. NPDC has no odontogenic origin and, for this reason, clinical diagnosis of vitality from the associated tooth helps to conclude the case<sup>2</sup>.

Lesion growth and adjacent teeth displacement may make patient complain about pain, dental mobility, and facial asymmetry<sup>12, 13</sup>. This is one of the rare described cases in literature about radicular cyst near to nasal fossa floor with patient complaint about pain to palpation and chew. Due to closeness to noble facial structures, the surgical procedure was planned under general anesthesia at Hospital Manoel Victorino, Salvador-Bahia-Brasil.

Endodontic therapy of offending teeth can be included as periapical cyst treatment, associated or not to surgical endodontic therapy. Some authors prefer immediate surgical enucleation and pathological store curettage in order to remove all epithelial remnants<sup>1,4</sup>. Silva, Baroni & Cabral<sup>14</sup> studied maxillary cyst treatments by exclusive surgical modality (enucleation, decompression, and marsupialization) and prognosis were good in comparison to conservative treatments, which can demand a second approach.

Corroborating with these authors opinion, radicular cyst enucleation was performed in our report. This treatment was the most indicated to the case with the advantage to obtain the biopsy with the entire surgical specimen.

## CONCLUSION

This report approached a giant radicular cyst case in anterior region of the maxilla, causing discreet facial asymmetry, being considered a rare case in literature, especially for its microscopic characteristics, and with a successful treatment by surgical enucleation and curettage technique. Complete excision of lesion to the histopathological report permitted to elucidate a safe diagnosis since radicular cyst has similarity with other odontogenic or non-odontogenic lesions, which can be benign or malignant. It is crucial a detailed clinical analysis of the case to make the best choice of treatment in order to remove epithelial tissue remnants which are responsible to induce recurrences.

## RESUMO

O cisto radicular é o cisto odontogênico inflamatório maxilar mais comum. Tem predileção pela região anterior da maxila e sua ocorrência é mais frequente no sexo masculino entre a terceira e a sexta década. Como a literatura mostra poucos casos de grandes cistos radiculares causando assimetria facial, este trabalho tem como objetivo documentar um caso bem-sucedido de tratamento definitivo por enucleação cirúrgica de um cisto radicular gigante na região anterior da maxila. Paciente do sexo masculino adulto observou aumento de volume na região anterior da maxila direita, com sintomas, mobilidade nas unidades odontológicas 11 e 21 e evolução de aproximadamente um ano. A radiografia panorâmica mostrou imagem radiolúcida unilocular de aspecto oval revestida por um discreto halo radiopaco que se estendia até o ápice dos dentes 11, 12, 13, 21 e 22, sugerindo um cisto radicular. A excisão total da lesão e curetagem foi realizada sob anestesia geral e o exame histopatológico confirmou o diagnóstico do cisto radicular. O paciente está em acompanhamento pela equipe sem qualquer expectativa possível de recorrência da lesão. A proliferação e ativação de restos de células epiteliais de Malassez induzidas por cárie dentária explica a origem deste cisto. Cistos radiculares de grandes proporções são raros e seu crescimento é devido à reabsorção óssea e à expansão cortical, que pode atingir áreas nobres da face e causar assimetrias. O tratamento primário de grandes cistos é a enucleação, curetagem e o tratamento endodôntico dos dentes envolvidos.

**UNITERMOS:** Cisto Radicular; Patologia bucal; Cirurgia Bucal.

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