

# Unusual Aggressive Large Radicular Cyst Invading Maxillary Sinus: A Case Report

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## Abstract

Radicular cyst is a common odontogenic cystic lesion of the maxillofacial region and the most common odontogenic cystic lesion of inflammatory origin, it arises from the epithelial residues in periodontal ligament as a result of inflammation. We report a case of large radicular cyst of right posterior maxilla invading maxillary sinus, which was secondarily infected and was treated by surgical enucleation and curettage.

**Key words:** Diagnosis and prognosis, Maxillary sinus, Radicular cyst

## INTRODUCTION

The radicular cyst is the most common cystic lesion in maxillofacial region. It is the most frequent among, and classified as, odontogenic inflammatory cysts. It usually grows slowly, rarely attains a large size and causes destruction of the surrounding structures. Mobility, displacement, and root resorption of the adjacent teeth are possible, especially in enlarging cysts. It has male predilection and occurs more often in the permanent dentition than the deciduous dentition. The majority of the radicular cysts (60%) are seen in maxilla, especially in the incisor-canine region. They are commonly asymptomatic unless infected, and discovered during routine radiographic examination.<sup>1,2</sup>

Radicular cysts are seen as round or ovoid uni- or multilocular radiolucencies associated with the apex of a non-vital tooth. The radiolucencies have a radiopaque margin which extends from the lamina dura of the involved teeth. However, this margin disappears in the

case of inflammation and rapid extension, accompanied by commonly observed loss of lamina dura of the adjacent teeth.<sup>1</sup> In this article, we present a case of large, unusual aggressive radicular cyst invading the entire right maxillary sinus.

## CASE REPORT

A 28-year-old man was referred to the maxillofacial outpatient clinic by a dentist owing to a swelling in the right posterior region of maxilla for past 2 weeks; there was a history of root canal treatment of molar in same region 12 years back, intraoral examination revealed a swelling in the area of the right maxillary canine extending to the second molar. The swelling was bonyhard, nontender, expansion of the buccal cortex, approximately 3.5 cm in size, and the overlying mucosa was taut. The adjacent teeth tested vital, and no evidence of periodontal disease or caries was detected. There was no tooth mobility; the occlusion remained unchanged. The patient was asymptomatic and was otherwise healthy, and reported a noncontributory medical history. No history of trauma was recorded. Extraoral head and neck examination was unremarkable. There was no evidence of lymphadenopathy or any abnormal masses or rashes.

The panoramic radiograph of the patient showed a well-defined, unilocular, and radiolucent lesion from canine

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to second molar involving sinus. Fine needle aspiration cytology was tried which was unyielding, then surgical enucleation and curettage was performed under general anesthesia, a crevicular incision from lateral incisor to last molar with anterior releasing mucosa was placed and a full mucoperiosteal flap was raised. A plane of cleavage was established between cystic epithelial lining and surrounding bone. The whole cystic lining was enucleated into and it was sent for histopathological examination and curettage was done to make sure all remnants were removed; lesion was found to be eroding the medial and posterior wall of sinus, with feature of secondary infection with discharge of brown cheesy material. Primary closure of cystic cavity done with vicryl 3-0 sling sutures placed through interdental papilla, and interrupted sutures over releasing incision. The patient was kept on regular follow-up. The wound healed uneventfully (Figures 1-5).

## DISCUSSION

The radicular cyst is an inflammatory cyst associated with the root apex of a nonvital tooth. Because of the high incidence of pulpal pathology, it is the most common cyst of the oral and maxillofacial region. Radicular cysts can occur at any age, but curiously, they are seldom seen in children despite the high incidence of pulpal and periapical pathology in this group, which implies that there are few if any epithelial rests that result from the development of primary teeth.

Clinically, these cysts are associated with a tooth that is carious, has undergone previous restorative care, has sustained trauma, or is an apparent failure of root canal therapy. Radiographically, an apical radiolucency will be noted, but rarely, will there be bony expansion unless there is secondary infection.



Figure 1: Pre-operative intraoral photo depicting buccal and lingual cortical expansion

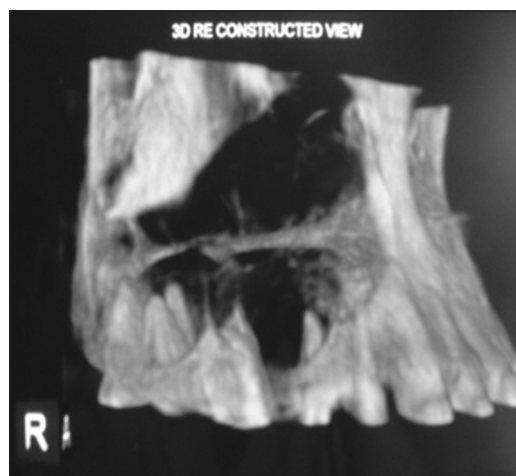


Figure 3: Three-dimensional view of computed tomography scan depicting invasion maxillary sinus

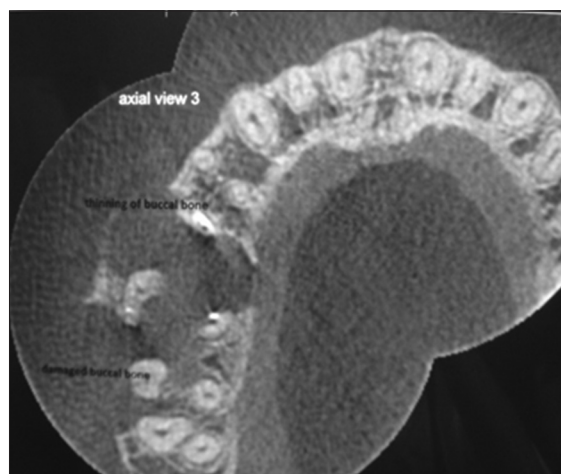


Figure 2: Axial view computed tomography scan depicting buccal and lingual cortical expansion with resorption

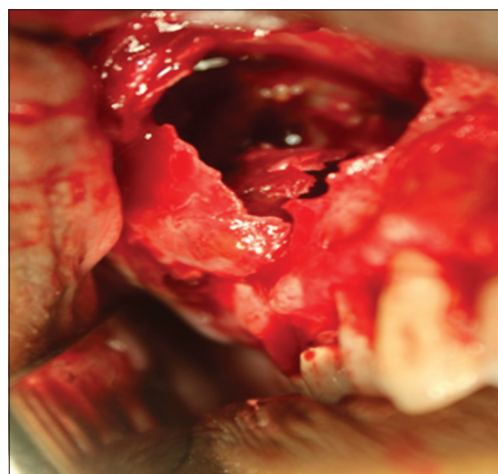
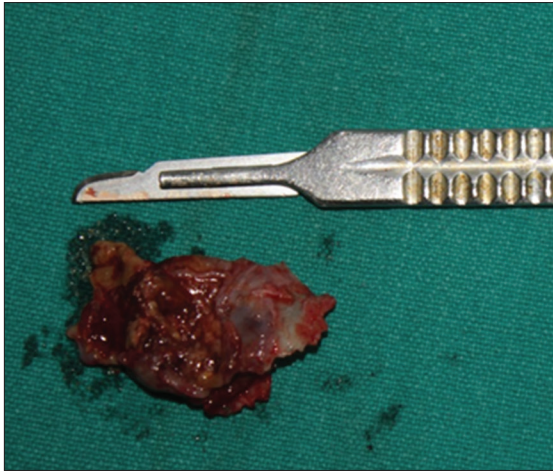


Figure 4: Intra-operative view depicting radicular cyst invasion into maxillary sinus



**Figure 5: In toto removal of the radicular cyst**

Much has been written about the radiographic distinction between periapical granulomas and radicular cysts, and yet there is no real distinction. The presence of a thin rim of sclerotic bone around the radiolucency is as indicative of a periapical granuloma as it is of a cyst.

Most radicular cysts are small, in the range of 0.5-1.5 cm, but they can exceed 5 cm. Some will also cause a regular smooth resorption of adjacent tooth roots, or they may have an irregular resorption of their roots of origin, presumably because of infection or osteoclastic factors elaborated by the cyst.

The radicular cyst is the model pathogenesis of an inflammation stimulated cyst and has been extensively studied. The origin of the cyst epithelium lies with rests of Malassez, which are epithelial remnants of Hertwig epithelial root sheath that lie dormant within the periodontal ligament. The products of pulpal infection and necrosis spill out into the periapical tissues, inciting an inflammatory response. The inflammatory cells secrete a host of lymphokines to neutralize, immobilize, and degrade bacteria. They also induce bone resorption through the elaboration of interleukin-1 and Osteoclast activating factors. These same cells are thought to elaborate many other factors.

Either directly or indirectly acts as epithelial growth factors, stimulating the proliferation of the rests of Malassez in the periapical granuloma. As the epithelial cell mass enlarges, the central cells become distant from their blood supply and break down, thereby forming a cyst. The cyst continues to enlarge by epithelial proliferation in the lining and by hydrostatic pressure generated in the cyst lumen from the hyperosmolarity created by cellular breakdown and sloughing of cells into the lumen. Therefore, the osmotic gradient favors transudation of fluid into the lumen,

which maintains its hydrostatic pressure and causes further resorption of the surrounding bone. This cycle can be broken and reversed in most situations if the inflammatory focus is removed (i.e., root canal therapy or tooth removal). However, if the tooth is removed, the apical lesion should be removed as well.<sup>3</sup>

### Differential Diagnosis

A periapical granuloma is radiographically and clinically indistinguishable from a radicular cyst. In the anterior mandible, the early osteolytic phase of periapical cemento-osseous dysplasia is a consideration, as is the uncommon sublingual salivary gland depression. In the posterior mandible, a submandibular salivary gland depression is a possibility as are idiopathic bone cavities. If the cystic cavity is large, then it could be a challenge to diagnose it through clinically and radiographically.<sup>4-6</sup>

It is important to remember that throughout both jaws, a wide array of odontogenic cysts and tumors, plus central mucoepidermoid carcinoma and certain fibro-osseous diseases, can begin or develop radiolucencies that may appear periapically.<sup>3</sup>

### Prognosis

Radicular cysts are definitively resolved if the tooth and the apical lesion are removed. If tooth is removed and the cyst is not, most cysts will involute because of the removal of the inflammatory focus. A few rare cases will retain their cystic stimulation independent of the tooth, probably by ongoing inflammation in the wall of the cyst. This is termed a residual cyst. Endodontically treated teeth will resolve radicular cysts as they do periapical granulomas as long as they have a successful pulp canal debridement and fill. In cases of endodontic failure due to incomplete fills or other pulpal leakage, the apical radiolucency will darken and enlarge, indicating a continuation of the granuloma-radicular cyst spectrum.<sup>7-10</sup>

In such cases, performing endodontic therapy again, often with assisted magnification techniques, will enable the treatment of accessory untreated canals. These accessory canals must be instrumented and filled and the previously treated canals retreated to larger sizes and filled. Apicoectomies with a retrofill of the apical area and curettage of the residual lesion or tooth removal is indicated if this retreatment fails.<sup>3</sup>

### CONCLUSION

With this report of case, we emphasize on thorough clinical and advanced radiographic examination of cystic lesion of posterior of maxilla because this could be latent or masked due to shadow of maxillary sinus in normal radiographs.

## REFERENCES

1. Ojha J, McIlwain R, Said-Al Naief N. A large radiolucent lesion of the posterior maxilla. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2010;110:423-9.
2. Igoumenakis D, Athanasiou S, Mourouzis C, Machaira E, Meztis M. An incidentally discovered radiolucency in the posterior maxilla. *Oral Surg Oral Med Oral Pathol Oral Radiol* 2014;118:513-8.
3. Marx RE, Stern D. *Oral and Maxillofacial Pathology*. 2<sup>nd</sup> ed. Chicago: Quintessence; 2003.3.
4. Caruso M, Boguslaw B, Kraut RA, Kushner GM. Large radiolucent lesion of the maxilla. *J Oral Maxillofac Surg* 1999;57:179-83.
5. Adel O, Souha B, Kawthar S, Abdellatif B. Extensive periapical cyst in the maxillary sinus a case report. *Int Dent J Stud Res* 2012;1:182-5.
6. Köse E, Canger EM, Şişman Y, Çanakç FG. Giant radicular cyst with bilateral maxillary sinus involvement. *J Oral Maxillofac Radiol* 2014;2:52-5.
7. Shear M. Radicular and residual cysts. In: *Cysts of the Oral Region*. 3<sup>rd</sup> ed. Boston: Wright; 1992.
8. Shafer WG, Hine MK, Levy BM. 8. *Oral Pathology*. 5<sup>th</sup> ed. New Delhi: Elsevier; 2006.
9. Wood NK, Goaz PW, Jacobs MC. *Periapical Radiolucencies in Differential Diagnosis in Oral and Maxillofacial Lesions*. St. Louis, MO: Mosby; 1997. p. 256-9.
10. Neville B, Damm D, Allen C, Bouquout J. *Odontogenic Cysts and Tumors in Oral and Maxillofacial Pathology*. Philadelphia, PA: Saunders; 2002. p. 589-612.

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