

Radicular Cyst of Posterior Maxilla Mimicking Mucous Retention Cyst: A Case Presentation

Donekal Guru Charan, Chembolu Neelima, Geetla Santosh Reddy, T. Sruti*

Department of Oral and Maxillofacial Surgery, Malla Reddy Dental College for Women, Hyderabad, Telangana, India.

Abstract

The radicular cyst also known as an apical periodontal cyst, periapical cyst, or dental root end cyst is a common sequel showing progressive changes associated with bacterial invasion and death of the dental pulp. The radicular cyst is classified as an inflammatory cyst because the process is thought to initiate the growth of the epithelial component. It may be classified as an odontogenic cyst because of its origin in cell rests of Malassez which are remnants of Hertwig's root sheath and are product of the odontogenic epithelial layer. Periapical cyst which develops in the vicinity of the maxillary sinus can show features of a mucous retention cyst leading to a diagnostic dilemma. This article reports a case of a periapical cyst in the right posterior maxillary alveolus near the maxillary sinus that shows features of a mucous retention cyst due to the involvement of the maxillary sinus lining.

Keywords: Hertwig's root sheath, Mucous retention cyst, Periapical cyst, Radicular cyst.

INTRODUCTION

Cysts of jaws are of great clinical importance because they are often large and cause loss of facial symmetry, nerve involvement, displacement of teeth and predispose jaw fractures, and have a very high frequency of occurrence. Radicular cysts are the most common cysts of jaws with an occurrence of 7–54% in permanent dentition. The apices of these teeth are commonly involved in the cyst. As the cyst grows larger, expansion of alveolar bone occurs, usually on the labial and buccal aspect of the jaw in the case of a typical odontogenic cyst. The formation of a cyst involves the following steps: The attraction of fluid into the cystic cavity, the retention of fluid into the cavity, the production of raised internal "hydrostatic pressure," and the resorption of surrounding bone with an increase in the size of the bone cavity. Most radicular cysts are asymptomatic and are accidentally discovered during a radiological examination performed for other reasons. They develop from epithelial remnants of the periodontal ligament as a result of inflammation, migration, and infiltration of inflammatory cells which is an effect of pulp necrosis or may originate from cell rests of Malassez which are remnants of Hertwig's root sheath and is a product of the odontogenic epithelial layer. Maxillary radicular cysts show respiratory epithelial lining with mucin contents showing different pathological conditions and cause challenges in diagnosis for the clinician and pathologist. We

report a case of a radicular cyst in the right posterior maxilla showing features of a mucous retention cyst.

CASE REPORT

A 34-year-old female patient reported to the Department of Oral and Maxillofacial Surgery with the chief complaint of pain in the upper right back tooth region for 10 days. On examination, intraorally, a 2×2 cm size solitary oval-shaped swelling was seen above the roots of the upper right first molar, that is, 16. It is soft to firm in consistency extending inferiorly to the alveolar crest and superiorly to the depth of vestibule anteriorly up to 14 into posteriorly to 17. Radiographically, the lesion appears as a well-defined solitary cystic lesion with corticated borders occupying the maxillary sinus in which the floor of the sinus is pushed superiorly. Perforation of the buccal cortical plate is seen. No root resorption was seen in 15, 16, and 17 (Figures 1 and 2).

Final needle aspiration cytology revealed thick mucus contents resembling a mucus retention cyst. Differential diagnosis could

Address for correspondence: Dr. T. Sruti,
Department of Oral and Maxillofacial Surgery, Malla Reddy Dental College
for Women, Hyderabad, Telangana, India.
Email: shruthi11thogiti@gmail.com

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Figure 1: 3D CT images showing loss of buccal cortical bone

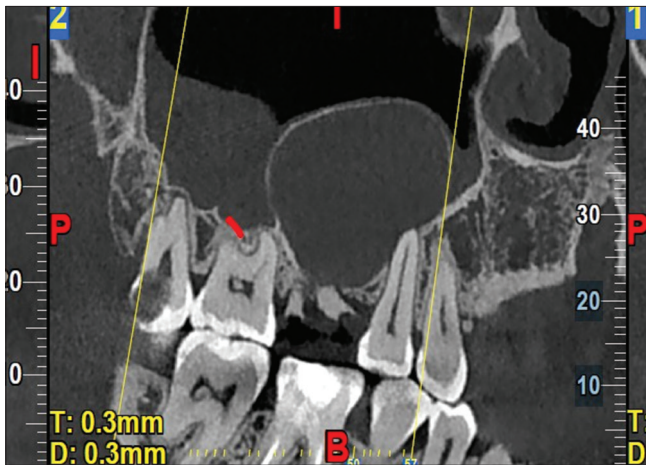


Figure 2: CT images show a radiolucent lesion with a radio-opaque border above 16 extending into the maxillary sinus with the floor of the sinus pushed superiorly

be a radicular cyst in relation to 16 or a mucus retention cyst of the maxillary sinus. The treatment planned was surgical enucleation of the cyst with extraction of 16 root stumps. There was no external communication noted. Histopathological examination (HPE) revealed pseudo-stratified respiratory epithelium with mucin contents. The final diagnosis was confirmed as a radicular cyst resembling mucous retention cyst as there were grossly decayed teeth associated with the cyst and also disruption of lamina dura of 16 seen. The histopathological examination revealed the appearance of respiratory epithelium with mucous contents due to entrapment of the epithelial lining of the sinus floor (Figures 3 and 4). The patient is kept under periodic follow-up for recurrence (Figures 3 and 4).

DISCUSSION

The prevalence of periapical cysts in the maxilla is 60% when compared to the mandible. Periapical cyst or radicular cyst is slow growing and associated with mobility of teeth, root



Figure 3: Lesion showing the presence of mucous contents, sent for HPE



Figure 4: Enucleation of the radicular cyst with extraction of 16

resorption, and displacement of teeth.^[1,2] Maxillary cysts which are lined by respiratory epithelium are ciliated or could be an unusual radicular cyst.^[3] A radicular cyst is the most common odontogenic cyst of jaws.^[3-5] It arises from inflammation of root apices of the tooth due to pulp necrosis which stimulates cell proliferation from remnants of odontogenic epithelial rest of Malassez.^[3,5,6] A radicular cyst is usually lined by non-keratinized stratified squamous epithelium but sometimes, maxillary radicular cyst can be partially or totally lined by respiratory epithelium, that is, ciliated stratified columnar epithelium. Literature explains three postulates, that is, the migration of cells from the maxillary sinus or from the nasal cavity, metaplasia of stratified squamous epithelium, and differentiation from totipotent cells present in the maxilla or mandible. Later, the expansion of cysts is caused by differences in the osmotic pressure.^[3]

On the contrary, mucus retention cyst of the maxillary sinus forms from the retention of mucous from mucous glands in the maxillary sinus epithelium or entrapment of sinus mucosa in the surgical wound or obstruction of duct from serous mucous glands. These cysts are generally slow and asymptomatic but

show inflammatory symptoms once they are infected.^[7,8] Their incidence is 3–14%. These cysts mimic maxillary pathologies due to their proximity to the teeth. The probable relationship between odontogenic infection and maxillary sinus mucus retention cyst is through maxillary infection which penetrates the sinus and gives origin to mucous cyst.^[9] In literature, cysts of the maxillary sinus are divided into intrinsic and extrinsic – Intrinsic which arises within the antrum and extrinsic which is odontogenic in origin.^[5]

In our case, the patient did not undergo any previous surgical procedure related to the right maxilla. There is a grossly decayed tooth 16 in relation to the cyst. However, during a surgical procedure, we found a cyst to contain thick mucus material and HPE showed pseudo-stratified respiratory epithelium. Radiographically, it is unilocular radiolucent well-defined margins with sclerotic edge with buccal cortical plate resorption seen in the floor of a maxillary sinus; the thin layer of bone covering the root is seen as a fusion of lamina dura and floor of the sinus. The sinus floor dips between buccal and palatal molar roots creating an illusion of roots projecting into the sinus. Septa in the sinus mimics periapical disease. Only HPE reveals whether it is odontogenic or non-odontogenic in origin.^[10]

The recommended treatment options for the radicular cyst are decompression, marsupialization, or surgical enucleation of the cyst with either an endodontic approach or extraction of the offending tooth; we choose to enucleate the cyst and extraction of grossly decayed 16.^[2] The patient has been kept under follow-up and it is been a month and surgical wounds are healing satisfactorily. There was no perforation of the maxillary sinus seen, and the integrity of vital structures was maintained. Hence, we are presenting a case of radicular cyst in the maxilla related to the right first molar with no previous history of trauma or surgery in that region. There is a possibility of an unusual radicular cyst which could have been caused by periapical inflammation leading to sinusitis and perforation of the maxillary sinus floor and the stratified squamous epithelium replaced by the respiratory epithelium of the sinus with mucus contents.

CONCLUSION

The above case is a rare presentation of a radicular cyst behaving like a mucous retention cyst when it develops near the maxillary sinus. Detailed history, clinical, radiological, and HPE reveal their true nature. Early presentation of the symptoms and early diagnosis will result in a better prognosis and less invasive management. Follow-up of the patient is required for signs of recurrence.

CONSENT

Written informed consent was obtained from the patient.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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