

Research Article

UNUSUALLY GIANT RADICULAR CYST PRESENTING IN MAXILLARY SINUS APPROACHING NASAL FLOOR: A RARE CASE REPORT

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ABSTRACT

Presenting a case of a 25-year-old male patient with a diagnosis of radicular cyst reported to the Oral and Maxillofacial Surgery Department with a chief complaint of swelling over his face over upper back teeth region since one year. It proved to be a radicular cyst based on the histopathology report after the excision biopsy. In this case report, we focus on diagnostic aspects and surgical management of radicular cyst involving maxillary sinus. The treatment of choice for this patient was enucleation under general anesthesia. No recurrence was noted during the follow-up period.

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INTRODUCTION

A cyst is a pathologic cavity lined with epithelium that may contain fluid or semisolid matter. They are divided into three categories:

1. Non-odontogenic cysts from lines of fusion,
2. Pseudocysts that are lined only by connective tissue
3. Non-epithelial/odontogenic cysts from remnants of enamel epithelium.²

The odontogenic epithelium is the source of most cysts. Radicular cysts, which account for roughly 62% of all odontogenic cysts in the jaw bones, are the most common in the oral cavity. They are caused by necrosed pulp.¹ The primary cause of the pathogenesis of cysts is toxins from micro-organisms. These toxins enter the apex and cause infection in the periapical area. The inflammatory response subsequently triggers the cell rest of Malassez, commonly observed in the periodontal ligament, leading to the development of periapical cysts or granulomas.⁴ Based on the size of the radiolucency seen on the radiograph, it is classified as periapical granuloma which is usually less than 2 cm and if it's more than that, we call it periapical cyst.^{4, 5} Occasionally, these cysts may grow to enormous proportions, destroying the surrounding anatomical structure. This case report describes the case of a 25-year-old male patient who had a giant radicular cyst involving the maxillary sinus. The patient was diagnosed with the radicular cyst based on history, clinical examination, FNAC reports, and CBCT. The cyst was surgically removed under general anesthesia.

Case description

A 25-year-old male patient reported to the oral and maxillofacial surgery department, MIDSAR, Latur with a chief complaint of swelling on the right middle third of the face for 1 year which was associated with the mild, intermittent, non-radiating type of pain and pus discharge which was relieved after taking medications. The swelling was small in size and progressed gradually to the present size of 4x3 cm over the period.

During an extraoral examination, a single diffuse swelling measuring approximately 4 X 3 cm was observed over the right middle third of the face. It extended anteriorly to the lateral surface of the nose, posteriorly over the malar region, superiorly from the right infraorbital ridge, and inferiorly up to the alaragus line. The external surface over the swelling appeared normal and showed no signs of secondary changes. On palpation, it was hard, smooth, non-tender, and non-indurate, with no pus discharge. (Fig 1)



Fig. 1 extraoral appearance showing diffuse swelling over right cheek region

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On intra-oral examination, vestibular obliteration was seen over the right maxillary posterior region (extending from 14 to 18), and bony expansion over the buccal vestibule was seen. The swelling was diffuse, with smooth borders, fluctuant, and soft in consistency. Grossly decayed 18, 17 & root pieces with 16 were seen. The provisional diagnosis of the chronic dentoalveolar abscess was proposed with a differential diagnosis of the infected radicular cyst. (Fig 2)



Fig. 2 intraoral examination revealed diffuse swelling with vestibular obliteration

CBCT was suggestive of localized radiolucency extending from the mesiobuccal root of 16 into the maxillary sinus with perforation of the lateral wall of the maxillary sinus. Haziness was seen in the maxillary sinus along with loss of buccal and palatal cortical plate with PDL space widening and loss of lamina dura suggestive of radicular cyst extending and involving maxillary sinus. Mucocele of the maxillary sinus or benign odontogenic tumor, ameloblastoma or adenomatoid odontogenic tumor was thought on CBCT appearance. (Fig 3)



Fig. 3 CBCT report showing radiolucency extending from roots of 1st molar extending upto maxillary sinus

INVESTIGATIONS

Fine needle aspiration cytology was performed, which revealed a pale yellow liquid that was sent for histological examination. Reports suggestive of radicular cyst based on both histological and clinical correlation.

Treatment plan

Endodontic treatment of 14 & 15 followed by surgical enucleation of the cyst, extraction of 16, 17, 18, and Apicectomy with 14 and 15 was planned and performed under general anesthesia.

The various approaches include,

1. Intraoral caldwell-luc procedure
2. Extraoral approach using weber-ferguson incision
3. Endoscopy

The extra-oral advance is more beneficial for large, superficial, and malignant lesions. The endoscopic advance is for less approachable lesions like those inside the nasal cavity or profound in paranasal sinuses, for this patient, we preferred taking an intraoral approach for aesthetic reasons.

Operative procedure

Endodontic treatment with 14 and 15 was planned before the surgical procedure. The patient was taken in OT under all aseptic precautions, nasal intubation was carried out, and scrubbing painting, and draping were done. Local infiltration was done with 2% Lignocaine with Adrenaline (1:2, 00,000) in the 13 to 18 region, crevicular incision was taken from the 13 to 18 region, and full thickness mucoperiosteal flap was raised, utilizing the thin maxillary bone distal to canine, maxillary sinus was approached. During the procedure, grossly decayed maxillary 16, 17 & 18 were extracted with complete excision of cystic lining along with maxillary sinus lining followed by peripheral osteotomy.

Apicectomy and retrograde filling were done using MTA with 14 & 15. A Foley catheter was placed through the inferior meatus and dilated in the cavity to maintain nasal osteotomy patency. Wound irrigation was done with 10 % betadine with a dilution of 1:10 with normal saline. Closure was done with 3-0 vicryl. A pressure dressing was given and the patient was shifted to the recovery ward uneventfully. The specimen was sent for histological examination & the hospital stay was uneventful with a good recovery.

Follow Up

After 7 days patient reported no pain, facial swelling, or discomfort over the operated area. Healing at the site was satisfactory. (Fig 4)



Fig. 4 postoperative photo showing good healing
Histological examination was done following an excisional biopsy which was suggestive of radicular cyst.

DISCUSSION

An inflammatory odontogenic cyst that develops due to chronic necrosed pulpis known as a radicular cyst. Because pulpal pathology is more common in the oral cavity, these cysts are more common than other odontogenic cysts. There are three distinct phases to the pathophysiology of radicular cysts:

1. The phase of initiation
2. The phase of cyst formation
3. The phase of enlargement.

Often asymptomatic, radicular cysts are typically found by routine radiography. However, in chronic cases, the cystic lesion will typically exhibit typical signs and symptoms, including swelling, displacement of an unerupted tooth, tooth mobility, and root resorption of the involved tooth. Eggshell cracking is seen in large swelling associated with bone resorption and cortical enlargement. On intraoral examination, it is generally caused either due to carious tooth, improperly restored tooth, traumatized teeth or root canal failure cases.⁶ they often remain asymptomatic even when they are very large. They are slow growing and may cause bony expansion, involving maxillary sinus, erosion of orbit and nasal septum as well as hard palate.

In the present case, carious teeth were the prime cause for occurrence of the radicular cyst.

The maxillary sinus cysts are classified as either "intrinsic" or "extrinsic" depending on whether they originate from an odontogenic source or within the antra. The intrinsic ones consist of Mucocele and retention cysts. In contrast, extrinsic pathologies are classified according to their frequency as radicular cysts, dentigerous cysts, keratocystic odontogenic tumors, residual radicular cysts, and calcifying cystic odontogenic tumors.

Histopathologically it shows cystic lumen, lined with a thin epithelial lining supported by a fibro cellular connective tissue stroma, showing dense chronic inflammatory cell infiltrate with few cholesterol clefts.^{1, 2}

The unilocular radiolucent lesion with well-defined radiopaque sclerotic borders is known as a radicular cyst on radiography. It doesn't usually manifest as a multinodular. Typically located in the periapex and having a diameter greater than 2 cm, but if it is large, it may extend into the antrum, raising the floor and giving the impression that a thin plate of bone is covering the lesion.^{7, 16}

If the infection is contained in the periapical region, root canal therapy can be used to remove the microbes and reduce their invasion. An Apicectomy may be performed; otherwise, tooth extraction and curettage of the surrounding tissue are advised; however, if the cyst is larger in size, surgical enucleation and marsupialization are performed. In the present case, surgical enucleation was performed followed by peripheral osteotomy.^{8, 9, and 16}

CONCLUSION

Radicular being the most common pathology in tooth bearing area and generally occur smaller in size seen at the apex of non-vital tooth. But rarely can it grow slowly to larger size causing destruction of adjacent vital structures. This article reports a rare case of large radicular cyst and different approach to manage cyst involving maxillary sinus.

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