



RADICULAR CYST: A CASE REPORT

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Abstract: The most common odontogenic cystic lesions of inflammatory origin are the radicular cyst. Since the lesion consists of a pathological cavity that is often filled with fluid and is walled by epithelium, it is a true cyst. The epithelial lining is formed from Malassez's epithelial remnants, which grows more as a result of the inflammatory stimulation from a pre-existing granuloma. It is also known as a root end cyst or periapical cyst. The majority of cases are asymptomatic and frequently involve a non-vital tooth. Radicular cysts are unintentionally found during a normal radiography checkup. This case report focuses on a huge radicular cyst in the upper left anterior maxillary region, that occurred due to trauma following a fall and caused breach of cortical plates in the labial and palatal region with a history of longer duration.

keywords - Odontogenic cyst, Radicular cyst, trauma.

I. INTRODUCTION

The category of lesions known as odontogenic tissue tumors is unusually varied. Since all of these tumors begin through some deviation from the typical pattern of odontogenesis, their heterogeneity reflects the complex developmental history of the dental structures. Some of the lesions are not real neoplasms but rather modest changes in odontogenesis. The inclusion of the odontogenic cysts is justified by the fact that they, too, are aberrations at some stage of odontogenesis and may be closely linked to the emergence of some odontogenic tumors.

According to Kramer et al. in 1974, a cyst is a diseased hollow that contains a liquid or semi-fluid, a gaseous substance that is frequently but not always lined by an epithelium and is not brought on by the buildup of pus. A radicular cyst is defined as a cyst arising from the epithelial residues in the periodontal ligament known as the cell rests of Malassez (derived from Hertwig's epithelial root sheath), as a consequence of an inflammatory reaction, usually following the death of the dental pulp.¹

According to Tortorici et al. (2008) and Gayathri and Don (2017), maxillofacial odontogenic cysts are a rare type of cystic lesion. They might be categorized as inflammatory cysts or developmental cysts depending on where they came from. The most typical odontogenic cyst seen is a radicular cyst. It is the typical but not inescapable fallout from the periapical granuloma, which develops as a result of bacterial infection and causes pulp necrosis, almost always occurs after the tooth has been affected by caries.

The most common type of cyst, the radicular cyst, was found to occur in 54% of cases, and males are more predisposed to OCs than females. A higher incidence of OCs (53%) was noted in the maxilla, and there was a statistically significant relationship between cyst type and site ($p < 0.05$). The second to third decade of life was the most common age of occurrence. Within the limits of the study, it was observed that a greater prevalence of radicular cysts was seen, in the 2nd-3rd decade of life, with higher frequency in the upper arch and in male population.²

The most common histopathological type was radicular cyst (48.67 %), followed by calcifying odontogenic cyst, glandular odontogenic cyst, lateral periodontal cyst, paradental cyst, residual cyst, adult gingival cyst, and dentigerous cyst.

Odontogenic cysts were most frequently found in the mandible (49.33%) and in posterior region (33.33%). Radicular cysts were the most often seen form, with a male to female ratio of 1.35:1. The lesion was predominantly seen in patients between 11–30 years of age. Maxillary anterior teeth (50.68 %) were most commonly affected.³

CASE REPORT

A 17-year-old female came to our department with the chief complaint of swelling on her upper left anterior teeth region since one month. (Figure 1) Before 30 days, the patient was in good health; but, later, she began to experience swelling in the area around her upper left anterior teeth region, which started off smaller and grew progressively to its current size. One week prior, the swelling had pain, so she visited a nearby dentist and took medication. The pain began suddenly, was of the pricking type, was intermittent in nature, worsened while chewing food, and subsided when medications were taken. Patient discloses a trauma history, including a fall on school ground at the age of 10, followed by root canal therapy the following year. Her prior medical history was irrelevant. The patient was moderately built, nourished, and well oriented. Lymph nodes were not palpable.

On intraoral examination a pale red, solitary swelling with a dome shape was noted over the upper left anterior teeth region, measuring about 3 * 2.5 cm in size. The mucosa around the swelling appears normal. Anterior posteriorly the swelling extended 0.5 cm away from the palatal aspect of teeth 21, 22 and approximately 3 cm away from the hard and soft palate junction and medially swelling extends till the mid palatine raphe without crossing the midline of hard palate and laterally to the palatal aspect of teeth 22, 23 with ill-defined limits. In the vicinity of 21, 22, and 23. There was labial vestibular obliteration, no ulceration or no pus discharge noticed. (Figure 2)



Figure 1



Figure 2

All inspectory findings on the site, extent, border, and mucosa around the swelling are confirmed upon palpation. The lesion was smooth, afebrile, moderately painful, soft to firm in consistency, and had noticed eggshell crackling effect.

On palpation, there was no sign of bleeding or pus discharge. All the affected teeth were nontender on percussion. The patients' oral health was fair, with minor calculus, stains, and enamel caries i.r.t. 17,37,47.

The patient was advised to get an intraoral periapical radiograph (Figure 3a) for radiological examination after that a maxillary occlusal radiograph (Figure 3b) was taken for further evaluation of the lesion, and cone-beam computed tomography was taken to identify the extend of lesion to the nasal floor. (Figures 3c, 3d, and 3e).

The radiographic examinations identified a significant, well-defined radiolucent lesion on the left side of the maxilla, which was in the periapical regions of teeth 21, 22, 23. Incomplete root canal treated tooth with open apex noticed i.r.t 21. Displacement of 22 and 23 in a distal direction noticed. No signs of root resorption. noticed.

Intraoral periapical radiograph and maxillary occlusal radiograph, reveals a well- defined radiolucency noticed i.r.t 21 region. (See Figure 3a and figure 3 b).

On CBCT, a hypodense osteolytic lesion of roughly 19.36*22.67 mm in dimension which extends from mesial aspect of root apex of upper left central incisor (21) to distal aspect of upper left canine (23) suggesting the size of a cyst noticed. Incomplete root canal treatment noticed on 21. Noticed tooth displacement i.r.t 22, 23. The labial and palatal cortical plates were breached, with breach in the floor of nasal fossa noted. No signs of root resorption were found (Figures 3c, 3d, and 3 e).



Figure 3a

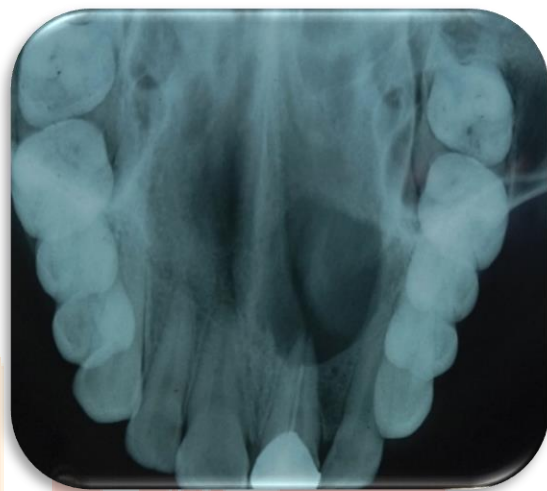


Figure 3b



Figure 3 c

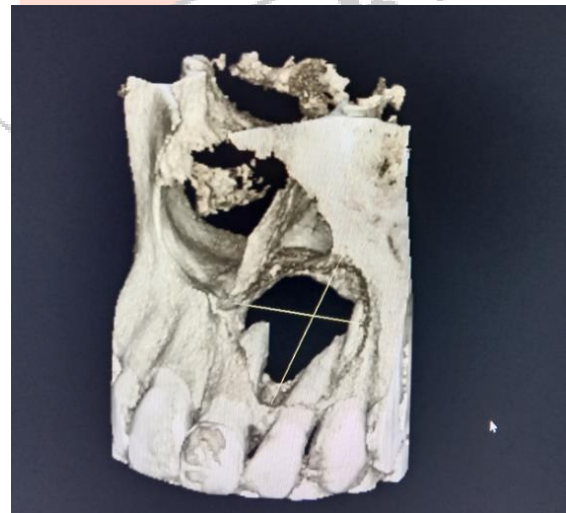


Figure 3 d

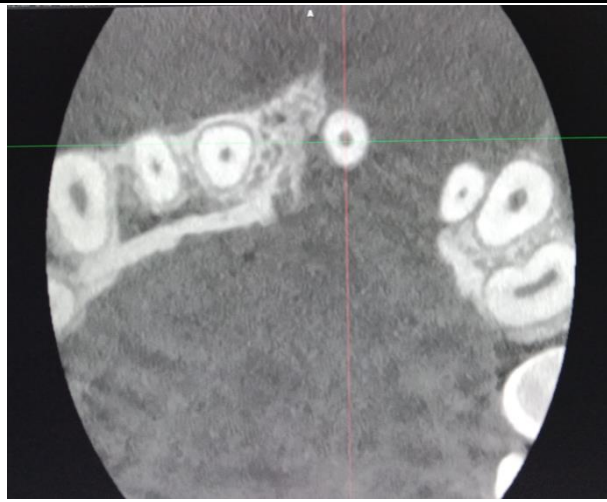


Figure 3 e

DISCUSSION

The most common odontogenic cyst is a radicular cyst. It develops from the cell rests of Malassez or nearby bone's epithelial cells as a result of inflammation. According to Tay (50.7%), Ochsenius et al. (50.7%), Shear et al. (52.3%), etc., radicular cysts are the most prevalent odontogenic cysts, with an incidence between 50% and 60%. Silvia et al. discovered an incidence of 84.5%, and Sharifian et al. recorded an incidence of 37.9%.⁴

About 70% of all jaw cysts are radicular cysts, which are categorized as epithelium lined, inflammatory, and odontogenic cysts.⁵ Radicular cysts typically develop as a result of tooth caries or trauma. Inflammation of the pulp cavity due to dental caries results in necrosis of pulp. An acute abscess or a persistent granuloma result when the infection extends to the tooth's apex and the root of the tooth. A periapical cyst may develop as a result of chronic infection that is persistent.

In this case, patient had given a history of trauma 7 years back and it could be the probable etiology. The pathogenesis of radicular cysts comprises three distinct phases: the phase of initiation, the phase of cyst formation, and the phase of enlargement. It is clinically exhibited as labial or palatal swelling in the maxilla and buccal in the mandible. Initially, it tends to be a bony hard enlargement, but as the cyst develops in size, the bone gets resorbed and becomes thin, and a characteristic springiness or egg shell crackling is perceived on the swelling and becomes fluctuant.⁶

Cortical expansion and root resorption of the affected tooth and displacement of the adjacent teeth are common features of radicular cysts.⁷

Most radicular cysts are small, ranging in size from 0.5 to 1.5 cm. In the maxilla, sometimes, a cyst associated with molars or premolars may enlarge to such a point that it encroaches on almost the entire sinus, and the residual sinus space may appear very thin.⁸ The cyst in this instance measures roughly 3 × 2.5 cm.

Histological characteristics:

Nonkeratinized stratified squamous epithelium lines almost all radicular cysts, either entirely or in part. The thickness of this lining, which can range from 1 to 50 cell layers, may be discontinuous. Early on, the epithelial lining may proliferate and display arcing along with a strong inflammatory infiltration. The lining of the cyst remains quiescent and fairly uniform with some degree of differentiation as it grows larger, resembling simple stratified squamous. When it does occur (2% of cases), keratin production only affects a portion of the cyst wall. PMNs make up the majority of the inflammatory cell infiltrate in the proliferative epithelium, while chronic inflammatory cells are present in the surrounding fibrous capsule.⁹

CONCLUSION

Mostly odontogenic cysts are commonly seen on vital tooth. But Radicular cyst, are typically found on non-vital teeth. Buccal cortical plates typically expand in radicular cyst patients. This is a rare instance of the labial and palatal cortical plates being completely breached. Either accidentally or during a normal radiographic examination, a radicular cyst is found. In this instance, the radicular cyst wasn't discovered for 7 years, which is a lengthy time.

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CONFLICT OF INTEREST

Authors have no conflict of interest.

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