



## Case Report

# Extensive radicular cyst: A case report

Ritika Jindal<sup>1\*</sup>, Vimal Arora<sup>1</sup>, Subrata Roy<sup>1</sup>, Niketa Sahu<sup>1</sup>

<sup>1</sup>Clove Dental, India

## Abstract

Radicular cysts are the most common inflammatory odontogenic cysts, typically resulting from pulpal necrosis and chronic periapical inflammation. This case report highlights a rare presentation of an extensive mandibular radicular cyst in a 39-year-old female, discovered incidentally during orthodontic treatment. CBCT revealed a large unilocular radiolucency with inferior displacement of the inferior alveolar nerve canal. Histopathological examination confirmed the diagnosis of a radicular cyst. The case emphasizes the importance of CBCT in assessing lesion extent and the necessity of histopathology for definitive diagnosis.

**Keywords:** Radicular cysts, Odontogenic cysts, Inferior alveolar nerve.

**Received:** 22-05-2025; **Accepted:** 09-06-2025; **Available Online:** 17-07-2025

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)

## 1. Introduction

Radicular cyst is the most common odontogenic inflammatory cyst. Radicular cyst arises consequently to necrosis of pulp. In response to pathological stimulus inflammatory response sets in that stimulates cell rests of malassez to form cystic cavity and that cyst enlarges with hydrostatic pressure. Clinically, radicular cyst may present as symptomatic or asymptomatic lesion. These cysts comprise about 52% to 68% of all the cysts affecting the human jaw. Their incidence is highest in third and fourth decade of life with male predominance.<sup>1</sup> Radicular cyst most often presents in maxilla than mandible. Clinically radicular cyst often goes unnoticed and is usually detected as incidental finding on radiographs or may present as clinically visible swelling if the extension and bone expansion is large. These cysts may cause expansion of the cortical plates, invaginate into the maxillary sinus, or depress the inferior alveolar nerve canal (IANC). Small cysts occasionally cause resorption of the

IANC.<sup>2</sup> Larger cysts do not cause resorption of the mandibular canal; instead, the mandibular canal is often displaced downward by the pressure of the cyst while remaining intact.

On histopathological examination most of the radicular cysts presents with a wall composed of inflammatory fibrous or granulation tissue lined by a non-keratinized stratified squamous epithelium. The epithelium is proliferative and has elongated long-rete pegs that usually form the characteristic arcading pattern. Long standing cyst may show comparatively minimal inflammatory components with a regular thin epithelium. The inflammatory component is often mixed, may also contain prominent foamy histiocytes, cholesterol crystal deposits, foreign body giant cells etc. Hyaline and Rushton bodies are characteristic findings of radicular cysts but may not be always seen<sup>3</sup>. Although literature has discussed about radicular cyst, this article tries to discuss radiological findings of an extensive radicular cyst

\*Corresponding author: Ritika Jindal  
Email: [ritika.jindal@clovedental.in](mailto:ritika.jindal@clovedental.in)

presented with inferior displacement of inferior alveolar canal.

## 2. Case Report

A 39-year-old female patient came to a dental clinic for radiographic investigation. Patient complained of dull aching pain on right side of lower jaw. Patient was already undergoing fixed orthodontic treatment since past 1 year. On examination mild vestibular obliteration noted irt # 44-47 region. Panoramic radiograph of the patient revealed a large radiolucent lesion irt # 44--47 region. Patient was advised CBCT and a scan of mandibular jaw done with carestream 8200 - 3D Neo.



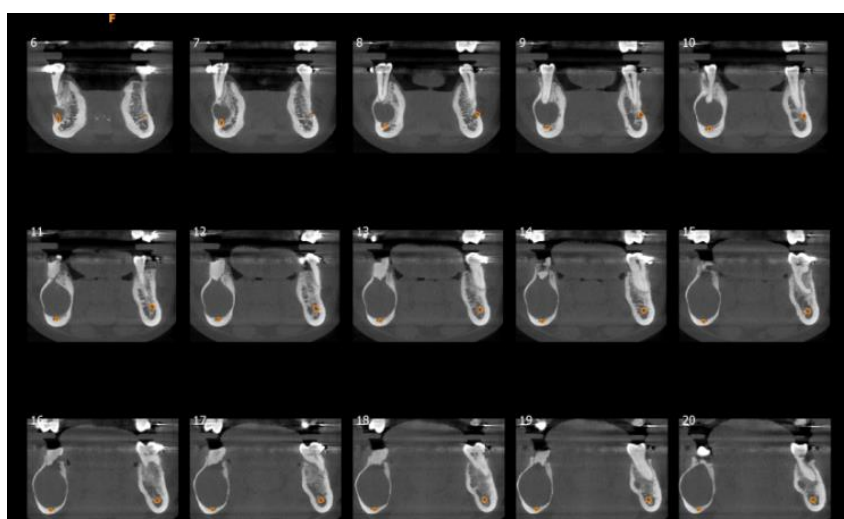
**Figure 1:** Panoramic Radiograph revealing radiolucency with inferior displacement of IANC



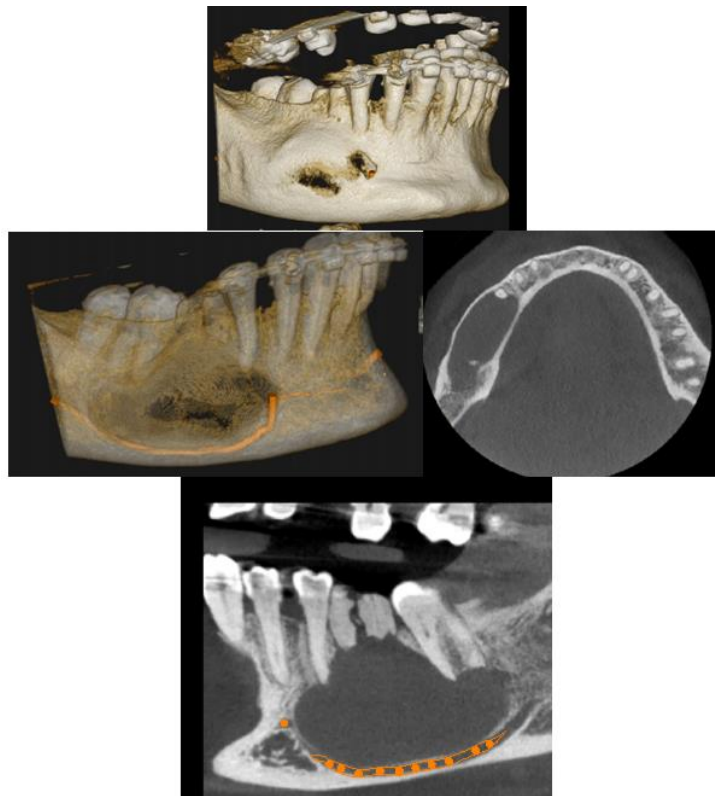
**Figure 2:** Reconstructed Panoramic Image with CBCT Scan

### 2.1. CBCT findings revealed

A well-defined non corticated unilocular radiolucency noted irt # 44-47 region. Radiolucency was roughly ovoidal in shape with maximum antero-posterior\*bucco-lingual\*superio-inferior dimension of the lesion as 34.9\*12.3\* 21.5mm. The lesion was causing mild expansion and extreme thinning of cortical plates in relation. There was marked downward displacement of inferior alveolar canal in relation with focal erosion of superior cortical outline of the canal near region of mental foramen. Lesion was involving apical regions of # 44, 45, 46, 47. The epicentre of the lesion appeared to be # 46 with near total coronal effacement of tooth with residual root pieces noted. There was external root resorption involving apical thirds of root noted. In this region lesion had maximum extent from crest of ridge to inferior border of mandible. Based on the findings a provisional radiographic diagnosis of secondarily infected radicular cyst was made since the lesion was involved with decayed # 46 with residual root pieces. So most likely radicular cyst was thought about. However, a Keratocystic odontogenic tumor was considered as differential. The histopathology of the lesion after excisional biopsy revealed inflammatory fibrous cyst wall with foamy histiocytes, multinucleated giant cells and cholesterol clefts. Focal area showed stratified squamous epithelium with Rushton bodies and underlying mildly inflamed fibrous stroma and bone bits. The histopathology findings confirmed it to be a radicular cyst without any evidence of keratin, granuloma or malignancy.



**Figure 3:** Coronal sections of mandible premolar to molar region



**Figure 4:** CBCT findings of the lesion

### 3. Discussion

A cyst is defined as a pathological cavity having fluid, semi fluid, or gaseous contents, which is not created by accumulation of pus. Cysts are classified into odontogenic and nonodontogenic based on the tissue they arise from. Odontogenic cysts are often broadly divided into developmental and inflammatory cysts based on their etiology. Radicular cysts and Lateral periodontal cyst are classified as inflammatory odontogenic cysts. The most common inflammatory odontogenic cysts in tooth bearing areas of the jaws are radicular cysts (Periapical cyst, apical periodontal cyst, dental root end cyst). They originate from an epithelial rest of Malassez in periodontal ligaments secondary to inflammation. They are most often found at the apices of the involved teeth with infected or necrotic pulps; however, they will even be found on the lateral aspects of the roots in relation to accessory root canals.<sup>4,5</sup>

Radiographically most radicular cysts appear as round or pear-shaped unilocular radiolucent lesions within the periapical region. The cysts may cause root resorption or displacement of adjacent teeth.<sup>6</sup> Radicular cystic lesions undergo asymptomatic evolution with crepitations followed by erosion and fluctuation of the overlying soft tissue. The bone within the surrounding area will be thinned out with

springiness and eggshell crackling, resulting in cortical plate expansion. The alveolar ridge exhibits a paper-like texture on palpation. These benign yet potentially destructive lesions have long perplexed dental and medical professionals alike, demanding a deeper understanding to ensure timely diagnosis and effective management. Radiographically, the radicular cyst is a unilocular radiolucent lesion with well-circumscribed sclerotic borders that are often radiopaque.<sup>5,7</sup> The lesion is associated with the apex of the tooth and a diameter of at least 1 cm is postulated to be necessary to differentiate it from that of a normal follicular space. Other odontogenic cysts like dentigerous cysts, odontogenic keratocysts, and odontogenic tumors such as ameloblastoma, pindborg tumor, odontogenic fibroma, and cementomas may share the same radiologic features as radicular cysts. Microscopic evaluation is necessary most of the time to define the type of lesion. If untreated, the radicular cyst slowly increases in size at the expense of the surrounding bone. The bone undergoes resorption but seldom is there a remarkable expansion of cortical plates, as is frequently seen in the case of dentigerous cyst.<sup>2,8</sup>

CBCT is an imaging tool to visualize 3D morphologic features, pathologies and its treatment planning along with assessment of treatment outcomes. However, histopathology

only, is the “gold standard” for achieving confirmatory diagnosis.

#### 4. Source of Funding

None.

#### 5. Conflict of Interest

None.

#### References

1. Mortazavi H, Baharvand M, Safi Y, Behnaz M. Common conditions associated with displacement of the inferior alveolar nerve canal: A radiographic diagnostic aid. *Imaging Sci Dent*. 2019;49(2):79–86.
2. Pekiner FN, Borahan O, Ugurlu F, Horasan S, Sener BC, Olgaç V. Clinical and Radiological Features of a Large Radicular Cyst Involving the Entire Maxillary Sinus. *J Marmara Univ Inst Health Sci*. 2012;2(1):31–6.
3. Rathi N, Reche A, Agrawal S. Radicular Cyst: A Cystic Lesion Involving the Hard Palate. *Cureus*. 2023;15(10):e47030
4. Ver Berne J, Baseri Saadi S, Politis C. A deep learning approach for radiological detection and classification of radicular cysts and periapical granulomas. *J Dent*. 2023;135:104581.
5. Devenney-Cakir B, Subramaniam RM, Reddy SM, Imsande H, Gohel A, Sakai O. Cystic and cystic-appearing lesions of the mandible: review. *AJR Am J Roentgenol*. 2011;196(6 Suppl):WS66–77.
6. Boeddinghaus R, Whyte A. Current concepts in maxillofacial imaging. *Eur J Radiol*. 2008;66(3):396–418.
7. Oliveira-Santos C, Souza PHC, Berti-Couto SA, Stinkens L, Moyaert K, Rubira-Bullen IRF, et al. Assessment of variations of the mandibular canal through cone beam computed tomography. *Clin Oral Investig*. 2022;16(2):387–93.
8. Farman AG, Nortjé CJ, Grotepass FW. Pathological conditions of the mandible: Their effect on the radiographic appearance of the inferior dental (mandibular) canal. *Br J Oral Surg*. 1977;15(1):64–74.

**Cite this article:** Jindal R, Arora V, Roy S, Sahu N. Extensive radicular cyst: A case report. *IP Int J Maxillofac Imaging*. 2025;11(2):66–69.