

# RADICULAR CYST: AN UNIQUE CASE REPORT OF MANDIBULAR ARCH

## Case Report

*Arkaprava Banerjee , Ajit Mishra , Anil Ghom , Arpan Aash*

*Department of oral medicine & radiology, Post Graduate Student, Maitri College Of Dentistry & Research Centre, Anjora, Durg, CG, 491001*

## ABSTRACT

Radicular cysts are the most common odontogenic cyst of anterior maxilla, not regularly comprehended in youth. They are found mostly at the apices of the tooth (periapical cyst), lateral surface of the roots (lateral radicular cyst) and remains in the jaw after removal of the offending tooth (residual cyst). It is an inflammatory cyst, as an outcome to pulpal necrosis succeeding caries, with a linked periapical inflammatory reaction. It is associated most commonly with the root apex of a non-vital tooth. They advance sluggishly and asymptomatic least infected. Because of this they can extent to a big dimensions. Many times it is perplexing to segregate radicular cysts from the obligatory pre-existing chronic periapical periodontitis lesions radio graphically. Here, we present a case of radicular cyst in relation to 2nd premolar (45) of the mandible in a 29 year old male patient. IOPAR and OPG shows a unilocular radiolucency with a well-defined border in the periapical region of the 2nd premolar on the right side. We also discussed clinical, radiographic, histopathological and therapeutic features of the case with a post-operative follow up to see the recurrence occurs or not.

**Key Words:** Radicular Cyst, IOPAR, OPG, FNAC, Cystic Lumen

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**Corresponding Author:** Arkaprava Banerjee , Department of Oral medicine & radiology, Maitri College of Dentistry & Research Centre, Anjora, Durg, CG, 491001, **Mobile:** 8777382010 ,

**E-mail:** banerjeearkaprava44@gmail.com.com

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## INTRODUCTION

The term “cyst” is derived from the Greek word “kystis” meaning, “sac or bladder”.<sup>[1]</sup> A cyst is a pathological cavity having fluid, semi-fluid, or gaseous contents which is not created by accumulation of pus (Kramer, 1974).<sup>[2]</sup> The bones with the highest prevalence of cysts in the human body are mandible and maxilla due to the abundant amount of epithelial remnants in the jaws.<sup>[3]</sup>

Odontogenic cysts are derived from 1. Tooth germ, 2. Epithelial rests of Malassez, 3. Reduced enamel epithelium, 4. remnants of dental lamina, 5. Possibly the basal layer of oral epithelium. Amongst the various types of odontogenic cysts observed, radicular cyst is one of the most common which in turn is a subtype of inflammatory cyst.<sup>[4]</sup>

Radicular cyst in literature has been given multiple names according to its position, such as periapical cyst, root end cyst, apical periodontal cyst, or dental cyst. This originates as a result of inflammation due to pulpal necrosis or micro trauma from the epithelial cell rest of Malassez in the periodontal ligament. A radicular cyst is usually left unnoticed because of its asymptomatic nature unless it is been detected incidentally by radiographs. It clinically exhibits an enlargement is usually bony hard, which later becomes fluctuant when the cyst has eroded the bone completely.<sup>[5]</sup>

## CASE REPORT:

A 29 years old male patient presented with a swelling and associated pain in his lower right back region of jaw (FIG 1). The pain was dull intermittent and non-radiating in nature, aggravated while taking food and relieved after the stimulus was removed. Patient gave a positive history of removal of crown of 45 due to trauma 4 months back. There was no history of discharge from the swelling. He also did not take any prior pain medication. The swelling was approximately 2.5 x 2 cm in size and oval in shape with a smooth surface and ill-defined margin. Intra-orally tenderness was present with the root stump (45) on percussion.

For Radiographic evaluation we went for Intra-oral periapical radiograph and Orthopantomogram (FIG 2 and FIG 3); which revealed a well-defined unilocular radiolucency of 2.5x2 cm square periapically with 45. A thin well demarcated sclerotic margin is also seen around the radiolucent area which depicts the cystic lumen. The lesion is above the inferior alveolar canal nerve canal and does not seem to compress the nerve. No perforation or displacement of adjacent structures like root apices, alveolar bone can be seen. This gave a suggestive depiction of Periapical / Radicular Cyst.

Fine Needle Aspiration Cytology revealed straw coloured fluid which was sent for cytologic examination (FIG 4).

On the basis of clinical, radiological & cytological findings, A provisional diagnosis of right mandibular Radicular Cyst was made.

### MANAGEMENT

After informing the patient regarding the findings it was decided to go for enucleation and curettage. Patient was taken for surgery with the due aseptic precaution by prophylactic antibiotic coverage. A Proper anesthetized area was achieved before surgery by 2% lignocaine with 1:80,000 adrenaline. Crevicular incision was placed using no.11 bard parker blade with handle from distal aspect of first premolar to the distal aspect of first molar with releasing incisions placed on the either side of alveogingival sulcus (FIG 5).

A trapezoid full thickness mucoperiosteal flap was raised followed by extraction of the root stump (FIG 6).

Then the cyst was enucleated and aggressive curettage was done (FIG7). The excised area was then irrigated with povidine iodine and 0.9% normal saline solution. The flap was closed with 3-0 non absorbable silk suture. Simple interrupted sutures were placed on the incision margins (FIG 8). Primary haemostasis was achieved and post-surgical instruction were given. The excised tissue specimen was sent for histopathological evaluation.

Histopathological examination revealed that the H & E stained section shows cystic lumen lined by stratified squamous epithelium of variable thickness (FIG 9). The underlying stroma is fibrocellular with chronic inflammatory cells, plasma cells particularly prominent. Features are suggestive of Radicular Cyst.

### DISCUSSION:

A periapical cyst is also known as radicular cyst usually associated with a carious non-vital, discoloured, or fractured tooth. [6] Stimulation of cell rest of Malassez, which are found in the periodontal membrane due to trauma or pulp necrosis also contributes to the epithelial formation of the cyst. [7] In literature, radicular cyst is most common among all the cyst of jawbones comprising about 50-70 % of all cyst affecting bones of the human jaw. [8] The radicular cyst can be seen in between 30th and 50th aged group peoples and male sex prominent relatively affecting the maxillary anterior regions. The pathophysiology of radicular cyst has three phases; initiation, cyst formation, enlargement. [9]

Radicular cysts are usually found radiologically, as an acute exacerbation of a long standing case. These later on develop symptoms such as swelling, displacement of unerupted tooth, tooth mobility and root resorption. [10] The teeth associated with the cyst are always nonvital and may be discoloured too. [11]

Therefore, conservative surgical enucleation produces excellent outcome without recurrence (FIG 10 and FIG 11).



Figure 1: Intraoral site of swelling of lower right back region



Figure 2: IOPAR revealed unilocular radiolucency with cystic lumen

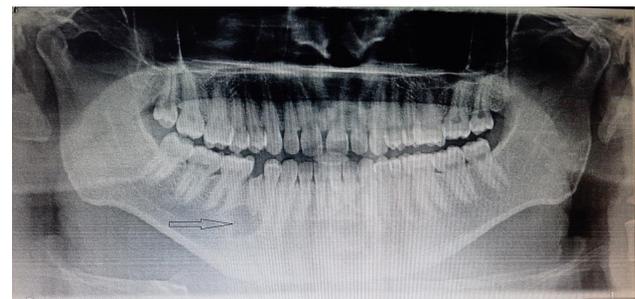


Figure 3: OPG shows the same as IOPAR



Figure 4: Aspiration revealed straw coloured fluid



**Figure 5:** Crevicular incision placed from distal aspect of first premolar to the distal aspect of first molar with releasing incisions placed on the either side of alveo-gingival sulcus



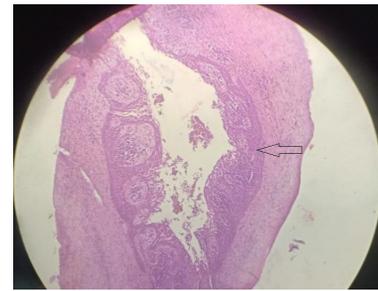
**Figure 6:** Trapezoid full thickness flap raised followed by extraction of root stump (45)



**Figure 7:** Cyst enucleation and curettage done



**Figure 8:** Simple interrupted sutures were placed on the incision margins



**Figure 9:** H & E stained section shows cystic lumen lined by stratified squamous epithelium of variable thickness



**Figure 10:** Clinical follow up after 1 month



**Figure 11:** Radiographic follow up after 1 month

## CONCLUSION

The choice of treatment depends on factors such as extent of the lesion, its relation to the surrounding structures, clinical characteristics of the lesion and systemic condition of the patient. The surgical treatments include total enucleation, marsupialization, or decompression or a combination of these techniques. This case of ours summarizes the clinical features, histopathological features and radiological features and the management.

## DECLARATION OF CONFLICTING INTERESTS:

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### CONFLICTS OF INTEREST

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### REFERENCES:

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1. Nair PN. New perspective on radicular cysts: Do they heal? *Int Endod J* 1998; 31: 15560-.
2. Shear M, Speight PM. Cysts of the Oral and Maxillofacial Regions. 4th ed., Ch. 1. Oxford: Blackwell Munksgaard; 2007.
3. Kolari V, Rao HT, Thomas T. Maxillary and mandibular unusually large radicular cyst: A rare case report. *Natl J Maxillofac Surg* 2019; 10: 2703-.
4. Banu Gurkan Koseoglu, Belir Atalay, Mehmet Ali Erdem Odontogenic cysts: A clinical study of 90 cases: *Journal of Oral Science* 2004; 46: 2537-.
5. Kumaravelu R, Jude NJ, Sathyanarayanan R. Radicular Cyst: A Case Report. *J Sci Dent* 2021; 11(1): 2325-.
6. Shafer HL. Textbook of pathology. 6th ed., Amsterdam: Elseier; 2006.
7. Lin LM, Huang GT, Rosenberg PA. Proliferation of ept cells rests, formation of apical cysts aber periapical wound healing. *J Endod* 2007; 33(8): 908916-.
8. Riachi F, Tabarani C. Effective management of large radicular cyst using surgical enucleation vs marsupialization. *IAJD* 2010; 1: 4451-.
9. Lustmann J, Shear M. Radicular cysts arising from deciduous teeth. Review of the literature and report of 23 cases. *Int J Oral Surg* 1985; 14: 15361-.
10. Weber AL, Kanela T, Scrivani SJ, Azizs A. Jaw: cyst, tumour and non tumourous lesions. In: *Head and neck imaging* Som PM, Curtin HD, ed. 4th ed., St. Louis, MO: Mosby; 2003, pp. 930944-.
11. Shansudeen SM, Selvakumar T, Uma Magesh DD, Srinivasa Prasad T, Nalin Kumar S. Radicular cyst – a case report with an overview on pathogenesis. *Indian J Mutidicip Dent* 2012; 3(4): 4551-.