Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 32s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

"Management of radicular cyst in the aesthetic zone mimicking periapical pathology: a diagnostic challenge"

Dr. Ibtisam Shahin [1], Dr. Sapna Tandon [2*], Dr. Payal Kumari [3], Sonika Sharma [4], Dr. Himanshu Chauhan [5], Dr. Hemant Mehra[6]

[1]Junior Resident, Saraswati Dental College and Hospital, Tiwari Ganj, 233, Faizabad Rd, Uattardhona, Uttar Pradesh, 226028

Email ID : Ibtisam0818@gmail.com

[2]Reader, Saraswati Dental College and Hospital, Tiwari Ganj, 233, Faizabad Rd, Uattardhona, Uttar Pradesh, 226028

Email ID : drsapnatandon@gmail.com

[3]Junior Resident, Saraswati Dental College and Hospital, Tiwari Ganj, 233, Faizabad Rd, Uattardhona, Uttar Pradesh, 226028

Email ID : drpayalkumari1@gmail.com

[4]Sonika Sharma: Intern, Saraswati Dental College and Hospital, Tiwari Ganj, 233, Faizabad Rd, Uattardhona, Uttar Pradesh, 226028

Email ID : ss8759001@gmail.com

[5]Dr. Himanshu Chauhan: Reader, Saraswati Dental College and Hospital, Tiwari Ganj, 233, Faizabad Rd, Uattardhona, Uttar Pradesh, 226028

Email ID : drhimanshu7988@gmail.com

[6]Dr. Hemant Mehra: Professor and H.O.D., Saraswati Dental College and Hospital, Tiwari Ganj, 233, Faizabad Rd, Uattardhona, Uttar Pradesh, 226028.

Email ID : hemantmehra121@gmail.com

Corresponding Author

Dr. Sapna Tandon

Reader,Department of Oral And Maxillofacial Surgery, Saraswati Dental College And Hospital Lucknow.Address-IIM, Lucknow

Email ID : drsapnatandon@gmail.com

Cite this paper as: Dr. Ibtisam Shahin , Dr. Sapna Tandon , Dr. Payal Kumari , Sonika Sharma , Dr. Himanshu Chauhan , Dr. Hemant Mehra,, (2025) "Management of radicular cyst in the aesthetic zone mimicking periapical pathology: a diagnostic challenge" *Journal of Neonatal Surgery*, 14 (32s), 9257-9260.

ABSTRACT

Background: Radicular cysts are the most common inflammatory odontogenic cysts, typically arising from non-vital teeth. Though frequently asymptomatic and discovered incidentally, their presentation in the anterior maxilla — an aesthetically sensitive region — may mimic other periapical pathologies, posing diagnostic and therapeutic challenges.

Case Presentation:A 46-year-old male presented with pus discharge and swelling in the anterior maxillary region. Clinical examination revealed a non-fluctuant, non-tender lesion with a sinus tract in relation to teeth 21–23, which were non-vital. Fine Needle Aspiration yielded yellowish, blood-tinged fluid, suggestive of a secondary infection. Radiographic and CBCT imaging revealed an ill-defined periapical radiolucency with cortical perforation extending from tooth 21 to 23. Root canal treatment of the affected teeth was performed, followed by surgical enucleation of the lesion and apicoectomy under local anaesthesia. Histopathologic analysis confirmed the diagnosis of a radicular cyst.

Conclusion: This case highlights the importance of integrating clinical, radiographic, and histopathological findings in diagnosing periapical lesions, especially in cosmetically sensitive zones. A combined endodontic and surgical approach proved to be effective in achieving complete resolution with minimal morbidity and optimal aesthetic preservation..

Keywords: *Radicular cyst, Periapical cyst, Root end cyst, Inflammatory odontogenic cyst, Anterior maxilla, Periapical pathology, Endodontic surgery, Apicoectomy, Cyst enucleation.*

1. INTRODUCTION

A radicular cyst, also known as a periapical cyst or root end cyst, is the most common type of inflammatory odontogenic cyst, associated with a non-vital tooth. It originates from the proliferation of epithelial cell rests of malassez in the periodontal ligament, which are stimulated by necrotic pulp tissue.

Typically, these cysts are asymptomatic and discovered incidentally during routine dental radiographic examination, appearing as well-defined, unilocular radiolucency's around the tooth apex. They are estimated to account for approximately 52–68% of all jaw cysts, making them the most prevalent cystic lesion in the jaw[1].

Radicular cysts are commonly seen in adults between the third and sixth decades of life, and they are slightly more prevalent in males than females. The anterior maxilla is the most frequently affected area, although the cyst can form at the apex of any non-vital tooth[1].

Histologically, the cyst has a lumen lined by stratified squamous epithelium and is surrounded by fibrous connective tissue infiltrated with chronic inflammatory cells.

Management typically begins with root canal therapy (non-surgical) for smaller cysts, while larger lesions may require surgical approaches such as enucleation, marsupialization, or guided tissue regeneration.

2. A CASE REPORT

A-46-year old male patient reported to the department with a chief complaint of pus discharge from anterior front tooth region since 4 days along with swelling in 21-23 region.

Clinical examination revealed a lesion of approximately 1.5x1cm in size. It appeared reddish-pink in colour and was non-fluctuant, non-tender on palpation, associated with a sinus opening in 21 region. On the pulp vitality test, 21-23 teeth were not vital. Also, there was no relevant medical history was present.

Fine Needle Aspiration revealed the presence of a yellowish fluid tinged with blood, which indicated a secondary infection within the radicular cyst.

"The radiographic examination revealed ill-defined periapical radiolucency approx. 14.9x12mm in diameter with perforation of labial and palatal cortical plates extending from apical third of mesial aspect of 21 till apical third of mesial aspect of 23 which is in close approximation with the floor of nasal fossa.

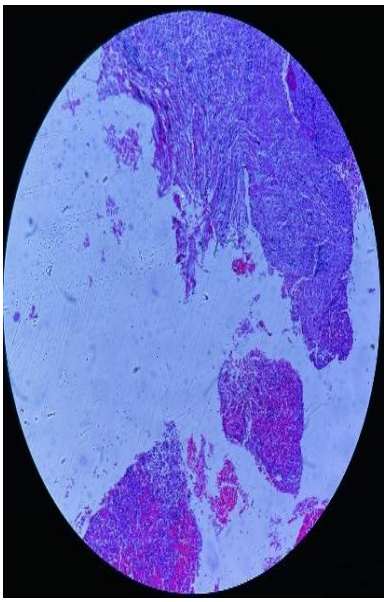

Fig:1 CBCT of the cystic lesion **Fig:2 Cystic lesion enucleation and curettage followed by apicoecotomy (Intra-op)** **Fig:3 Histological slide image of the cystic lesion**

Under local-anaesthesia, the root canal treatment of 21-23 was done priorly then cystic lesion enucleation and curettage followed by apicoecotomy was done as part of the treatment plan. After treatment specimen was submitted for

histopathological examination and the diagnosis of a radicular cyst was verified.

3. DISCUSSION

Radicular cysts are the most common inflammatory odontogenic cysts, comprising approximately 52-68% of jaw cysts and frequently involving the anterior maxilla in adult males aged 30–50 years[2]. They originate from epithelial rests of Malassez stimulated by pulp necrosis, leading to expansion through osmotic and hydrostatic pressure mechanisms.

Although often asymptomatic, secondary infection may produce clinical signs such as swelling, sinus tracts, and pus discharge—clinical features seen in our patient[3,4,5]. Radiographically, radicular cysts typically present as well-defined unilocular radiolucencies; however, larger or infected lesions may cause cortical perforation and ill-defined borders, as in our CBCT findings.

Histopathologically, these cysts exhibit a non-keratinized stratified squamous epithelial lining with chronic inflammatory infiltrate in a fibrous capsule—hallmarks confirmed in our case[6].

Small cysts may respond to root canal therapy alone, but large or true cysts often necessitate surgical intervention—namely enucleation and apicoectomy—with the cystic lining completely removed to minimize recurrence risk[7]. Our approach—combining root canal therapy followed by surgical enucleation and apicectomy with a retrograde fill (MTA or Biodentine)—aligns with successful management strategies described in the literature[8].

Furthermore, multidisciplinary coordination between endodontic and surgical teams is essential for lesions in the aesthetic zone, ensuring functional restoration and cosmetic preservation, as supported by recent case series[5,9,10].

In our case, complete radiographic healing and bone regeneration were observed without recurrence at follow-up—outcomes consistent with earlier reports using similar combined protocols[11,12,13].

Overall, this case underscores the critical value of integrating clinical presentation, advanced imaging, histopathology, and tailored operative planning in the diagnosis and management of radicular cysts mimicking periapical pathology in the anterior maxilla.

4. CONCLUSION

Radicular cysts, although asymptomatic in many cases, can present with secondary infection, swelling, or sinus tract formation. A multidisciplinary approach involving accurate clinical, radiographic, and histopathological evaluation is crucial for proper diagnosis. Combined endodontic and surgical treatment, as employed in this case, provides an effective and definitive resolution of large radicular cysts, minimizing the risk of recurrence

REFERENCES

[1] Khetan RR, Reche A, Basra AS, Awghad SS, Awghad S. Radicular cyst: The sequelae of untreated caries. Cureus. 2024 May 14;16(5).

[2] Sahore M. Management of a Radicular Cyst Encroaching the Maxillary Sinus in a Thrombocytopenic Patient: The Crucial Role of Oral Physicians in Careful Planning and Intervention.

[3] Raval RD, Nyklesh V, Patel HM, Naik PS, Patel PP. Management of infected radicular cyst in maxillary anterior region: a case report. Int J of Adv Health Sci. 2015;1:8-11.

[4] Sharma P, Singh S, Mandlik J, Handa A, Khan N, Chaubey S. Management of radicular cyst by surgical enucleation: case report. Eur Chem Bull. 2023;12:2331-7.

[5] Travassos, R.M.C., Martins, W.W.R., Martins, L.G., de Almeida, G.M., Chaves, A.T.D., Cardoso, M.D.S.O., da Paz, E.S.L., Alves, J., dos Santos Ferreira, G., de Queiroz Marques Filho, E. And Dos Santos, P.G.S.T., 2024. Tratamento de cisto radicular em maxila anterior com uso de agregado trióxido mineral (MTA) e enxerto ósseo: relato de caso. Brazilian Journal of Implantology and Health Sciences, 6(11), pp.472-482.

[6] Kadam M, Sharma A, Majumder H, Ganesh sv. Surgical management of radicular cyst associated with open apex and apicectomy with maxillary anterior teeth-a case report.

[7] Kaur J, Sroa RB, Kaur A, Kaur M, Kumar B, Kaur G. Surgical Management of Radicular Cyst with the Application of a Natural Platelet Concentrate and Ostoden: A Case Report. Journal of Pharmacy and Bioallied Sciences. 2024 Feb 1;16(Suppl 1):S987-9.

[8] Kadam NS, De Ataide ID, Raghava P, Fernandes M, Hede R. Management of large radicular cyst by conservative surgical approach: a case report. Journal of clinical and diagnostic research: JCDR. 2014 Feb 3;8(2):239.

[9] Ali GH, Ajili F, Hammami C, Blouza I. Interdisciplinary Management of Radicular Cyst in Anterior Maxilla-A Case Report.

[10] Doumari b, dhoum s, el hajjioui z, jabri m. Post-Traumatic Radicular Cyst Involving Multiple Anterior Teeth: Open Apex Management and Surgical Enucleation–A Case Report. Advances in Oral and Maxillofacial Surgery. 2025 Jun 24:100558.

[11] Prasada KL, Bhagawati B, Chawla G. Management of Radicular Cyst: A Case Report. Indian Journal of Public Health Research & Development. 2019;10(11):1207–9.

[12] Vigneshwar S, Ishwarya P, Priyadharsana PS. Case Report of Two Giant Radicular Cysts. International Journal of Scientific Research. 2021;10(6):1–2.

[13] Mukherjee D. An insight into the pathogenesis of odontogenic hamartomas involving oral cavity. Oral Maxillofac Pathol J. 2020 Jul 1;11(2):64