

Radicular Cyst Manifesting as Dentigerous Cyst: An Unusual Case Report

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ABSTRACT

Background: The site and age predilection, as well as clinical and radiological findings can often be misleading in the diagnosis of a cystic lesion. Although a radicular cyst forms at the periapical region of a tooth, sometimes the position and extension of the cyst can be such that the periapical radiolucency can be mistaken as a peri-coronal radiolucency, especially in mixed dentition stage where permanent developing tooth occupy the periapical region of primary tooth. In this article, we present a case report of radicular cyst associated with primary tooth in mixed dentition stage and their diagnosis and management in lieu to current literature.

Keywords: Radicular cyst, dentigerous cyst, mixed dentition.

INTRODUCTION

Radicular cyst and dentigerous cyst are the two most common cysts of jaws. Radicular cysts are inflammatory in origin and arise from the epithelial residues in the periodontal ligament as a result of inflammation, usually following death of the pulp. Dentigerous cysts can be developmental in origin and occur in permanent teeth usually as a result of impaction or it can be inflammatory in origin as a result of inflammation from a non-vital deciduous tooth follicle. Clinically and radiologically periapical radiolucency can be mistaken as a peri-coronal radiolucency in mixed dentition stage where permanent developing tooth occupy the periapical region of primary tooth. Thus we as clinician should be aware of the incidence, pathogenesis and precise treatment modalities in such cases.

CASE REPORT

A male patient aged 8 years reported to our department with chief complaint of pain and

swelling in his right cheek region since 3 days. Patient gave history of swelling first occurring one year back for which he visited dental clinic and was advised medication, following which swelling and pain had subsided and has recurred again since 3 days. Pain was severe, intermittent, non-radiating in nature, aggravated at night and relieved on taking medication. Swelling started 3 days back and was gradual in onset. Patient's medical history and family history was irrelevant and his dental history revealed that he visited dental clinic 2 days back for the same reason, where he was advised medication for the relief of pain.

On clinical examination extra orally a diffuse swelling was seen on the right cheek region measuring about 5 x 6 cm, roughly oval in shape, extending antero-posteriorly from right corner of mouth to 2 cm anterior to angle of mandible and supero-inferiorly from ala-tragus line to lower border of mandible (figure 1 and 2). Mucosa over the swelling appeared to be shiny and stretched.

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Fig 1: Front profile showing swelling.



Fig 2: Lateral profile.



Fig 3: IOPA radiograph irt 85 showing rarefaction in apical region of 85 and around neck of developing 45.



Fig 4: Occlusal radiograph showing rarefaction in relation to buccal cortex in the region of 85, but no expansion of cortex.

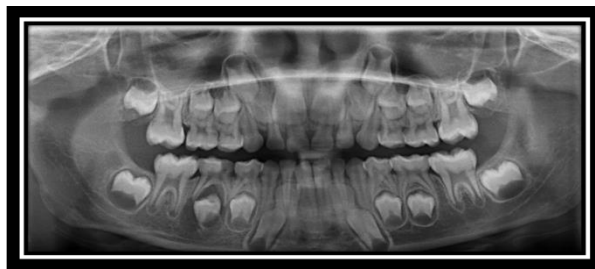


Fig 5: OPG showing carious tooth irt 85 with rarefaction in apical region of 85 and around neck of developing 45.



Fig 6: Extraction socket with 85.



Fig 7: Extracted tooth with 85.

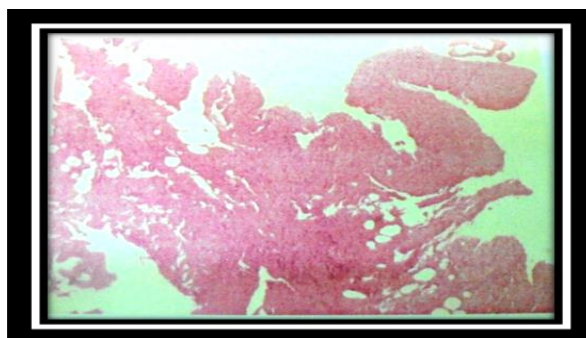


Fig 8: Histopathology report showing cystic epithelium.



Fig 9: Preoperative radiograph.



Fig 10: 1 Month Post-operative.

There was mild increase in temperature over the swelling, and was tender on palpation.

On intra oral examination on inspection, dental caries was noted i.r.t 85, and right lower vestibule was tender on palpation. Based on the history and present clinical findings a provisional diagnosis of 'Acute exacerbation of chronic periapical abscess i.r.t 85' was given and 'Infected radicular cyst' i.r.t 85 and 'Infected dentigerous cyst' i.r.t developing 45 was given as possible differential diagnosis. On radiographic investigations periapical radiograph (figure-3) showed well defined radiolucency on the mesio-occlusal aspect of 85, involving enamel, dentin and pulp. Periapically there was well defined radiolucency with uncorticated border measuring about 1 x 2 cm and seemed to surround the developing 45. Mandibular cross-sectional occlusal radiograph (figure-4) showed rarefaction in relation

to buccal cortex in the region of 85, but no expansion of cortex noted. Digital panoramic radiograph (figure-5) showed well defined radiolucency on the mesio-occlusal aspect of 85, involving enamel, dentin and pulp. Periapically there is well defined radiolucency with uncorticated border measuring about 1 x 2 cm and seemed to surround the developing 45.

Patient was put on antibiotic (Tab Amoxicillin (250 mg thrice daily) and analgesic (tab Paracetamol 160 mg + Ibuprofen 200 mg thrice daily) for three days following which tooth (85) was extracted (figure-6 and 7) and sent for histopathological examination. Histology report (figure-8) showed cystic epithelium of varying thickness overlying a connective tissue capsule with small number of lymphocytes and few plasma cells. The epithelium is non-keratinized non-stratified squamous epithelium, suggesting 'Infected Radicular cyst with 85. On recall visit after one month (figure-9, 10) extraction socket seemed to heal with normally erupting 45.

DISCUSSION

Both radicular cyst and dentigerous cyst are the most common of all jaw cysts.^{1, 2, 3} The Dentigerous cyst is most common in the paediatric age group, whereas the Radicular cyst is most common in the adult age group.⁴ Radicular cysts also called as apical periodontal cyst or root end cyst are inflammatory jaw cysts arising from the epithelial residues in the periodontal ligament as a result of inflammation, usually following death of the pulp.⁴ Pathogenesis of radicular cyst suggest the inflammatory stimulation of 'Epithelial Rests of Malassez' found in the apical periodontal ligament.⁵ Stimulation of cell rests of Malassez result in formation of periapical granuloma and eventually as the granuloma enlarges, the epithelium becomes devoid of blood supply and undergo necrosis giving rise to cyst. Radicular cyst comprise about 52-68 % of all jaw cysts⁶ and 42-44% of all apical lesions.⁷ It shows predilection for male patient in third decade of life with 60% occurring in anterior maxilla.^{1, 6} This may be attributed to their increase proneness to trauma and negligence in oral care.^{8, 9} Clinically it is usually symptomless unless secondarily infected.² It generally causes displacement of neighbouring structures rather than resorption. Radiographically

radicular cyst usually present as well circumscribed periapical, unilocular, radiolucency. If the cyst is associated with acute or chronic inflammation at the cyst wall, the epithelial lining of the cyst wall may be destroyed, regardless of cyst origin, leaving the cyst wall with granulation tissue.⁵ In deciduous teeth the involvement of furcation area is noted at much early stage. According to a study the mean diameter of Radicular cyst in paediatric age group was found to be 1.4 cm compared to 3.0 cm in adult age group.⁴ This can be due to difference in sizes of jaws of child and adult and also due to tendency of postponement of treatment in adults.

A follicular cyst or dentigerous cyst is a developmental odontogenic cyst developing around the crown of an un-erupted tooth and discovered mostly on routine radiographs.^{2, 10} The dentigerous cyst is most frequently found in the age group of 20-40 years and involves mandible in 75% of cases. The most prevalent areas for dentigerous cysts are, in order of frequency: the mandibular third molar, maxillary third molar, maxillary canine and mandibular second premolar. Dentigerous cyst is caused by fluid accumulation between the epithelium and the crown of an un-erupted tooth.² Radiographically it presents as a unilocular, radiolucent lesion characterized by well-defined sclerotic margins and associated with the crown of an un-erupted tooth.^{2, 10} Radiographically there is no sharp borderline between a normal enlarged pericoronal space and a cyst, however in a study, the mean diameter of dentigerous cyst was found to be 2.1cm in paediatric age group and 3.2cm in adult age group.⁴ Dentigerous cysts may be classified as central, lateral or circumferential based on the site at which the cyst develops in relation to the crown of the tooth.¹⁰ Dentigerous cyst is aggressive and have a greater tendency to cause root resorption than other jaw cysts. According to Benn and Altini, two types of dentigerous cysts are said to occur. The first is developmental in origin and occurs in mature teeth usually as a result of impaction. These cysts generally occur in mandibular third molars and thus noted in second and third decades. The second type is inflammatory in origin and occurs in immature teeth as a result of inflammation from a non-vital deciduous tooth follicle. These are diagnosed in the first and early part of the second decade.¹¹ The later type was the differential diagnosis for our case. The age of our patient, site

involvement, the infected deciduous tooth and developing premolar created the diagnostic dilemma.

Treatment strategy for radicular cyst depends on the size of the lesion. If the cyst is less than or equal to 1cm in diameter then conventional endodontics followed by a waiting period of 1 year to assess healing is advised which has a success rate of 85-90%.^{1, 6, 7, 12, 13} For larger lesions surgical means is advised. According to others, small cyst (<3cm) are usually enucleated, whereas large cysts (>3cm) are often marsupialized.^{14,15}

The disadvantage of marsupialization is that it is a two-stage surgical procedure and pathological tissue is left behind.¹⁶ Enucleation with primary closure is the treatment of choice as it is a one-stage surgical treatment, allows removal of all epithelial remnants and pathologic examination of the entire specimen.^{16, 17} The recommended treatment for dentigerous cysts is marsupialization, because it is the best way to conserve the permanent tooth.¹⁸ In our case, the cyst was enucleated with its capsule and teeth were removed, because cyst had caused resorption of distal root leading to poor prognosis of tooth involved and also developing second premolar was on the verge of eruption.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

- Rees JS. Conservative management of a large maxillary cyst. *International Endodontic Journal* 1997; 30: 64-67.
- Ko KSC, Dover DG., Jordan RCK., Bilateral Dentigerous Cysts - Report of an Unusual Case and Review of the Literature. *J Can Dent Assoc* 1999; 65: 49-51
- Takiguchi M, Fujiwara T, Sobue S, Ooshima T. Radicular cyst associated with a primary molar following pulp therapy: A case report *Int. J paediatr Dent*. 2001; 11(6):452-455
- Manor.E, Kachko.L, Puterman.M.B, Szabo.G, Bodner.L. Cystic Lesions of the Jaws: A

Clinicopathological Study of 322 Cases and Review of the Literature. *Int. J. Med. Sci.* 2012; 9(1):20-26

Regezi.J.A, Sciubba.J.J, Jordan.R.C.K. Oral pathology. Clinical pathologic correlations. 4th edition; page:53.

Nair P.N.R. Review New perspectives on radicular cysts: do they heal? In *ternational Endodontic Journal* 1998; 31:155-160

Bhaskar SN. Nonsurgical re solution of radicular cysts. *Oral Surg.*1972; 34: 458-468.

Killy HC, Kay LW. An analysis of 471 benign cystic lesions of the jaws. *Int Surg* 1966;46:540-5.

Shear M, Speight PM. Cysts of the oral and maxillofacial regions; 4th edition. Oxford: Blackwell Munksgaard; 2007.

Ludinghausen MC., Schindler G., Matsuura M. Follicular or dentigerous (Tooth-Containing) cyst in the premaxilla of an otherwise edentulous 65-yearold man. *Clinical Anatomy* 2001; 14: 95-101.

Ertas Ü, Yavuz MS. Interesting eruption of 4 teeth associated with a large dentigerous cyst in mandible by only marsupyalizattion *J Oral Maxillofac. Surg.* 2003; 61: 1-3.

Nair PNR, Pajarola G, Schroeder HE. Types and incidence of human periapical lesions obtained with extracted teeth. *Oral Surg Oral Med Oral Pathol* 1996; 81: 93-102.

Nair PNR., Sjögren U, Schumacher E, Sundqvist G. Radicular cysts affecting a root-filled human tooth: a long term post-treatment follow-up. *International Endodontic Journal* 1993; 26: 225-233.

Aslan M, Ş im ş ek G. Large residual dental cyst (A case report). *The Journal of the Dental Faculty of Ataturk University.* 2002; 12(3): 45-49.

Bodner L. Spontaneous bone regeneration after enucleation of large mandibular cysts:A radiographic computed analysis of 27 consecutive cases *J Oral Maxillofac. Surg.* 2000; 58: 94.

Bodner L, Manor E, Shear M, van der Wall I. Primary intraosseous squamous cell carcinoma arising in an odontogenic cyst- A clinicopathologic analysis of 116 reported cases. *J Oral Pathol Med* 2011;40:733-738.

van Doorm ME. Enucleation and primary closure of jaw cysts. *Int J Oral Surg* 1972;1:17-25.

Da Silva TA, De Sa AC, Zardo M, Consolaro A, Lara VS. Inflammatory follicular cyst associated with an endodontically treated primary molar: A case report. *ASDC J Dent Child* 2002; 69(3):271-274.