

CASE REPORT

‘The Cystic Adventure It’s Lucent Yet Obscure’

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Introduction

Cystic jaw lesions may be epithelial or non-epithelial, odontogenic or non-odontogenic, developmental, or inflammatory in origin. The most common cyst seen in children is dentigerous cyst.¹

Dentigerous cysts are developmental cyst of odontogenic origin and the most prevalent in the transitional dentition, comprising 14 to 24% of the entire jaw cyst. The mean age of occurrence is around 11 years and the incidence of dentigerous cysts is twice as high in male patients compared to females.^{1,2}

Radicular cysts are considered to be rare in primary dentition comprising of only 0.5 to 3.3% of total number of radicular cysts.³ Age group that is most commonly involved is 2 to 4 years and male to female ratio was 1.6:1. Caries

is the most common etiologic factor.⁴ Most commonly involved deciduous teeth are mandibular molars (67%), maxillary molars (17%) followed by the anterior teeth segment.⁵ Radicular cysts of deciduous dentition are

A B S T R A C T

Cystic lesions are a diagnostic dilemma when they occur in transitional dentition. In this case report we present a large maxillary radicular cyst in a pediatric patient with unique clinical presentation which posed a diagnostic predicament. Through this case report we will emphasize the indicators that will help in identification of such lesions and thus aid in the accurate treatment.

Key words: Radicular cyst, dentigerous cyst, deciduous dentition, enucleation.

usually asymptomatic and hence go unnoticed until detected through dental or radiographic examination. In most cases periapical radiolucency of primary teeth tends to be misdiagnosed as a periapical granuloma of primary teeth or dentigerous cyst from permanent successors.⁶

Our case presented the same diagnostic dilemma, a step by step evaluation which helped us to touch the correct diagnosis and treatment.

Case report:

A shy and apprehensive 10 year old female by name Sumati, was brought to the outpatient Department of Bapuji Dental College and Hospital, Davangere with chief complaint of intermittent pus drainage in the upper front region **of the mouth** from about 3 months. The child was medically fit with no systemic abnormalities and the past medical history was of no significance. This was the patient's first dental visit. The patient gave a history of mild, spontaneous, intermittent pain some years back in the right upper back tooth region, for which no treatment was done.

On extra oral examination we were able to appreciate a diffuse swelling on the right side of the face extending vertically from lower border of the eye to the corner of the lips, horizontally extending from the bridge of the nose to lateral 1/3rd of the cheek [fig 1]. There was no tenderness on palpation and no raise in temperature of the overlying skin.

Intra oral examination revealed sinus drainage in the region of 53 and 12. There was a root stump with 55 which was grade II mobile and 53 which was grade III mobile. The region from 12 to 16 showed vestibular obliteration with buccal cortical plate expansion [fig 2]. On palpation the springiness of bone was seen and pressure



Fig 1: Extra oral view of the patient, showing diffuse swelling on the right side of the face

application resulted in the exudation of pus from the sinus tract.



Fig 2 Intra oral view

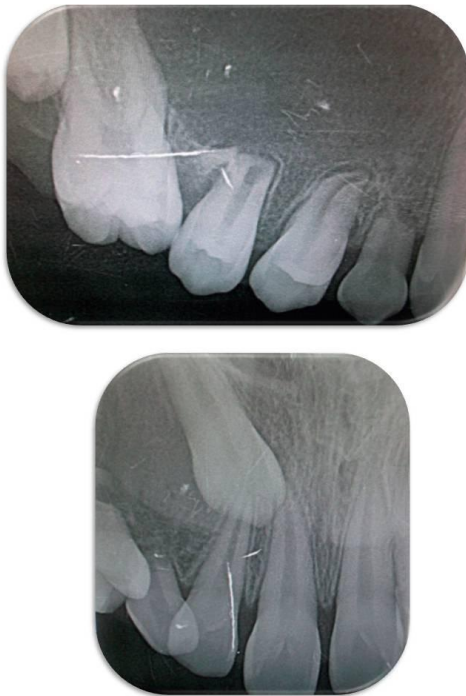


Fig 3 Intra oral periapical radiographs

Investigations advised were Orthopantomogram and Intra Oral Periapical Radiograph, which revealed a radiolucency extending from 16 to 12. The 13 was displaced under the 11. The 53

showed abnormal resorption. 14 and 15 had erupted with only 1/3rd root formation completed. The border of the lesion was not well demarcated [fig 3 and 4]. Fine Needle Aspiration Cytology (FNAC) was done and it showed that the fluid accumulated contained chronic inflammatory cells and protein content was 4.5mg/ dl. From the history, clinical examination, radiological examination and lab investigations the following differential diagnosis were consequential:

- 1.A dentigerous cyst associated with the 13
- 2.A radicular cyst associated with long standing peri radicular infection of the 55.
- 3.Odontogenic Keratocyst (OKC)

Weighing the points for the diagnosis:

Dentigerous cysts are usually involved with unerupted / impacted teeth. And in this case 13 was the impacted/ unerupted tooth. Dentigerous cyst have a radiolucency that surrounds the crown of the tooth and is attached to the cemento enamel junction (CEJ) around the tooth⁶ But in this case the follicular space around 13 was normal and



Fig 4: OPG showing a radiolucency extending from 16 to 12. The 13 displaced and the 53 showed abnormal resorption, 14 and 15 showing stunted root development.

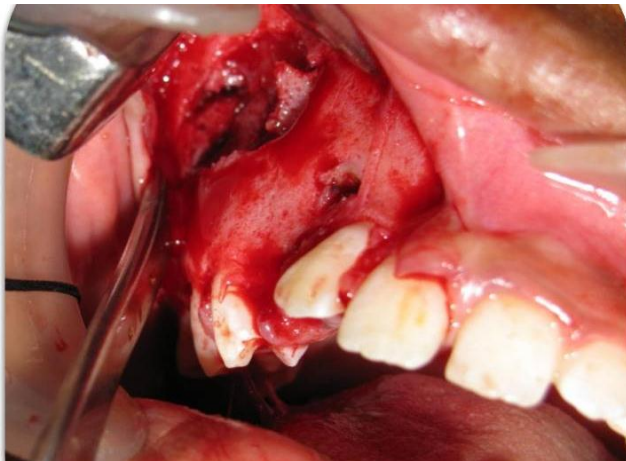


Fig 5: Sinus drainage was visible over the region of 53. The buccal cortex was thinned out over the region of 16, 15 and 14.

the cystic extension did not seem to be attached to the CEJ of 13. The lateral displacement of the 13 due to the excessive cystic pressure also



Fig 6: cystic lining and extracted 53

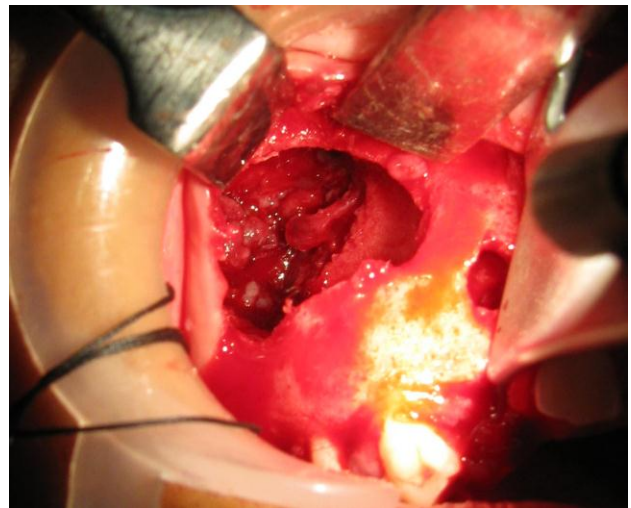


Fig 7 Intra operative view after the cystic lining was removed . the maxillary sinus lining is visible. All the rough bony edges smoothed out.

indicates a cyst origination lateral to 13 and not from it.

OKC's have a protein content of $<4\text{gm}/100\text{ml}^7$ but in this case the FNAC revealed a greater protein content hence excluding the diagnosis of OKC.

Hence the provisional diagnosis of an infected radicular cyst was made.



Fig 8: 6 months OPG showing spontaneous alignment of 13

Treatment:

Enucleation under GA was planned. Crevicular incisions were given from 16 till 11 and a releasing incision was given at 11. The mucoperiosteal flap was raised with howarth's periosteal elevator. Sinus drainage was visible over the region of 53. The buccal cortex was thinned out over the region of 16, 15 and 14 [fig 5]. The thinned out buccal cortex was removed using rongeurs. About 4.5 ml of pus was drained. The 53 was extracted. Further thinned bone removed and the cyst lining was scooped out [fig 6]. A part of the maxillary sinus lining was removed as it was found to be continuous with the cystic lining. All the rough bony edges were smoothened out and bleeding was

controlled [fig 7]. Primary closure was done using 3-0 vicryl sutures, horizontal suture placed with respect to the socket of 53 and inter dental sutures with respect to other areas.

Re-evaluation of the patient after 6 months revealed good healing, with 13 getting aligned to the occlusion [fig 8]. The 14, 15 and 16 were found positive for vitality tests.

Discussion:

Radicular cysts are also known as periapical cysts, apical periodontal cyst, root end cyst. They originate from the epithelial cells of malassez in periodontal ligament as a result of inflammation due to necrosis or trauma.⁶ Radicular cyst developing from deciduous teeth is a rare entity. From 1927 to 2004 only 112 cases have been reported in literature.⁸ The most common reason for the development of radicular cyst is infected primary teeth.

Assuming that the development mechanisms of radicular cyst are identical in primary and permanent dentition, the low frequency in the former is yet to be clarified⁹ but some of the reasons cited are:

1. Diagnostic errors and non-referral.¹⁰
2. Short time of presence of deciduous teeth.³
3. Less severe symptoms.¹⁰
4. Easy drainage in the deciduous teeth due to presence of numerous accessory canals.³
5. Radicular radiolucency in relation to deciduous teeth is always overlooked due to the underlying permanent tooth bud.³
6. Exfoliation or extractions lead to resolving of the lesion.³
7. The extracted teeth and any attached tissue are rarely submitted for histopathological examination.³

However, according to Mass et al and Deblen et al, this low frequency in literature may be underestimated and the lack of diagnosis should be worrisome, since this lesion may result in several adverse effects including enamel hypoplasia, cessation of root development, displacement and damage of the permanent successor.^{9,10}

The main reasons for the occurrence of radicular cysts are untreated non vital deciduous teeth or deciduous teeth treated endodontically with material containing formacresol which in combination with tissue protein is antigenic and has shown to elicit a humoral and cell mediated immune response.¹² The most commonly involved deciduous teeth are mandibular molars (67%), maxillary molars (17%) followed by anterior teeth.⁸ The size of radicular cyst varies according to a survey¹, the average mean diameter of radicular cyst is 1.4mm, and hence a large sized, maxillary cyst like in our case is a rarity.

Shaw et al noted that distinguishing feature between dentigerous and radicular cysts on histologic grounds is difficult; but a histologic examination may determine whether the lesion is chronic or acute in nature.¹³ Hence a combination of all investigations will reveal the right diagnosis.

| | Radicular cyst | Dentigerous cyst |
|----------------|---|--|
| History | History of chronic infections | History of missing tooth |
| On examination | Presence of non vital teeth | Presence of clinical missing/impacted teeth |
| | Painless swelling associated with a primary teeth | Painless swelling associated with missing or impacted teeth. |
| | Buccal cortical plate expansion | Buccal cortical plate expansion |
| Radiological | Well defined unilocular radiolucency associated with primary tooth | Well defined unilocular radiolucency with ratio of smooth and scalloped borders 4.8:1, with Cemento-enamel composition of the borders is seen. |
| | Size: Mean diameter is 1.4 | Mean diameter is 2.1 |
| | No involvement of permanent successor, with or without displacement. | Definite involvement of permanent successor with displacement seen in 67% of the cases |
| Surgical | Cyst separated from tooth germ | Cyst lining attached to the cement enamel junction of the involved tooth. |
| Histological | Stratified squamous epithelial lining is seen, the wall of the cyst consists of dense fibrous connective tissue containing neutrophils, plasma cells and histiocytes. | 2-4 layers of smooth non keratinized cells and the interface of epithelium and connective tissue is smooth |

Points that helped in correct diagnosis are: ^{13,1,6}

The major impact factors for treatment planning for such lesions as told by Samrity Paul et al were the size, site, patient's age and radiological picture. The options are enucleation or marsupialization. For inflammatory cysts which presented with periapical radiolucency, in relation to discolored/ fractured non vital teeth, decayed or extracted teeth, enucleation is the treatment of choice along with RCT/apicectomy in case of salvageable non vital teeth Or extraction in case of unsalvageable teeth¹⁴ In this case since 14 and 15 were erupted and the apex is open, chances of the teeth retaining its vitality is high and hence these teeth were retained as such. The abnormal aligned 13 was left to align itself, as according to Chiu et al normal alignment of permanent teeth occurred spontaneously after enucleation.¹⁵ and in the following recall visits it was seen that the 13 aligned itself.

Due to the varying clinical and radiological features of odontogenic cysts seen in the transient dentition, the accurate diagnosis using a sequential protocol is the need of the hour. With this case report we have laid out the mode to distinguish between radicular cysts associated with deciduous teeth and dentigerous cysts. We once again emphasize on meticulous evaluation of the peri radicular areas of primary teeth. The cystic potential of a radicular lesion in primary dentition should be carefully considered whether the deciduous teeth are treated or not.

Reference:

1. 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. I J of Med Sci 2012; 9(1):20-26.

2. Mishra R, Tripathi A M, Rathore M.
Dentigerous Cyst associated with Horizontally
Impacted Mandibular Second Premolar. *Int J of
Clin Pediatr Dent*, Jan-Apr 2014; 7(1):54-57.
3. Ramakrishna Y, Verma D. Radicular cyst
associated with a deciduous molar: A case report
with unusual clinical presentation. *J Indian Soc
Pedod Prev Dent* 2006; 24(3):158-160.
4. Lustmann J, Shear M. Radicular cysts, arising
from deciduous teeth. Review of the literature
and report of 23 cases. *Int J Oral Surg*. 1985
Apr; 14(2):153-61.
5. Elango I, Baweja DK, Noorani H,
Shivaprakash PK. Radicular cyst associated with
deciduous molar following pulp therapy: A case
report. *Dent Res J* 2008; 5(2):95-98.
6. Nagarathna C, Jaya AR , Jaiganesh I.
Radicular cyst followed by incomplete pulp
therapy in primary molar: A case report. *J
Indian Soc Pedod Prev Dent* 2013; 31(3): 191-
93.
7. Faustino SE, Pereira MC. Recurrent
peripheral odontogenic keratocyst: A case
report. *Dentomaxillofac Radiol*. 2008; 37:412–
14.
8. Shetty S, Angadi P V, Rekha K. Radicular
Cyst in Deciduous Maxillary Molars: A Rarity.
Head and Neck Pathology 2010; 4(1): 27–30.
9. Mass E, Kaplan I, Hirshberg A. A clinical and
histopathological study of radicular cysts
associated with primary molars. *J Oral Pathol
Med*. 1995; 24: 458–61.
10. Delbem AC, Cunha RF, Vieira AE, Pugliesi
DMC. Conservative treatment of a radicular cyst
in a 5-year-old child: a case report. *Int J Paediatr
Dent* 2003; 13: 447-50.
11. 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): 452-55.
12. Zerrin E, Hüsniye D K, Peruze C.
Dentigerous cysts of the jaws: Clinical and
radiological findings of 18 cases. *Journal of Oral
and Maxillofacial Radiology*; 2014; 2(3):77-81.

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13. Shaw W, Smith M, Hill F. Inflammatory follicular cysts. J Dent Child.1980; 47(2):97-101.

14. Paul S, Kapoor V, Kumar M, Narula R, Kapoor V, Kapoor U. A clinical study of cysts of the maxillofacial region; and an assessment of clinico-radiologico-pathological variables affecting the formulation of a comprehensive patient need based treatment plan. Indian J Dent 2014; 5(2): 69-74.

15. Chiu W K, Sham A S, Hung J N. Spontaneous alignment of permanent successors after enucleation of odontogenic cysts associated with primary teeth. Br J Oral Maxillofac Surg 2008;46:42-45.