

**Radicular Cyst of a Deciduous Mandibular Molar in an 8 Year Old Child: A Rare Case Report**

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**Abstract**

Radicular cyst is the most common developmental odontogenic cyst of the oral cavity. It is also known as periapical cyst, apical periodontal cyst, root end cyst or dental cyst. The frequency of radicular cysts in permanent dentition is about 7-54%, while in primary dentition, it is approximately 0.5-3.3% of the total number of radicular cysts in both the primary and permanent dentition. Radicular cysts originate from epithelial remnants of the periodontal ligament as a result of inflammation and associated infiltration of inflammatory cells which is generally a consequence of pulp necrosis. These cysts commonly involve the apex of the affected tooth. Most reported cases of radicular cysts were in molar teeth with apical infection caused by caries. These cysts are slow growing and asymptomatic unless secondarily infected. The classic treatment for radicular cyst is enucleation and extraction of the involved teeth. The article here describes about the case of a radicular cyst in a young girl aged 8years who reported with a painless swelling in relation to mandibular left second deciduous molar, which was diagnosed clinically and radiographically as a radicular cyst and was surgically enucleated at an early stage to prevent later complications in future.

**Keywords:** Radicular Cyst, Enucleation, Primary Molar

**Introduction**

A radicular cyst is generally defined as a cyst arising from epithelial residues (cell rests of Malassez) in the periodontal ligament as a consequence of inflammation, usually following the death of the dental pulp. Radicular cyst is the most common odontogenic development cyst of the oral cavity. Radicular cysts are usually caused due to untreated dental caries allow bacteria to travel through the pulp to the reach the periapex and producing deeper infection. The resulting pulpal necrosis causes proliferation which release toxins at the apex of the tooth epithelial rests of Malassez and the body's inflammatory response will attack the source of the toxins, leading to periapical infection. It can involve any included tooth, although molars and canines are the most affected ones. The frequency of radicular cysts in permanent dentition is about 7-54%, while in primary dentition, it is approximately 0.5-3.3% of the total number of radicular cysts in both the primary and permanent dentition. The classic treatment for radicular cysts is enucleation and extraction of the involved tooth. In large cysts, an initial marsupialization can reduce the size of the bone defect before definitive enucleation<sup>1</sup>. Since this cyst has a large prevalence in children, marsupialization can be advisable as definitive treatment to allow the eruption of the permanent tooth involved. Children have a great

regenerative potential and tooth with incomplete root development maintain the eruptive strength. In such circumstances, therefore, marsupialization or decompression should be tried as a major therapy<sup>2,3</sup>

The purpose of this article was to describe the case of a radicular cyst in a young girl, including her diagnosis, treatment, and follow-up.

### Case Report

An 8 year old girl was referred to the Department of Paedodontics & Preventive Dentistry, with a chief complaint of swelling in the lower left back tooth region since three months. There was no associated pain intraorally in the affected region. Clinical history revealed that the swelling (fig:1) started as a small nodule and increased to the present size (1 x 1 cm) over the last two months leading to facial asymmetry. On general examination the patient was healthy. Past dental history was insignificant. The patient was taking medications for the swelling for which it did not subside. Intra orally there was history of caries in the upper and lower back teeth region.

On extraoral examination facial asymmetry was noted on the lower left side of the face with no sinus opening or active pus discharge. Intraoral examination revealed a hard swelling in relation to 75 (which presented with deep dentinal caries) with obliteration of the buccal vestibule. The swelling was bony hard with expansion of the buccal cortex in relation to 75. The lingual cortex remained unaffected.



Fig 1: swelling irt 75

Panoramic radiograph (fig 2) and IOPA (fig 3) revealed a unilocular well defined radiolucency (1.8 x 1.5 cm) associated with an unerupted mandibular left second premolar. The radiolucency spanned towards the mandibular lower border beginning from the left first bicuspid to the mesial root of the permanent mandibular left first molar. The mesial and the distal roots of the deciduous second molar showed resorption.

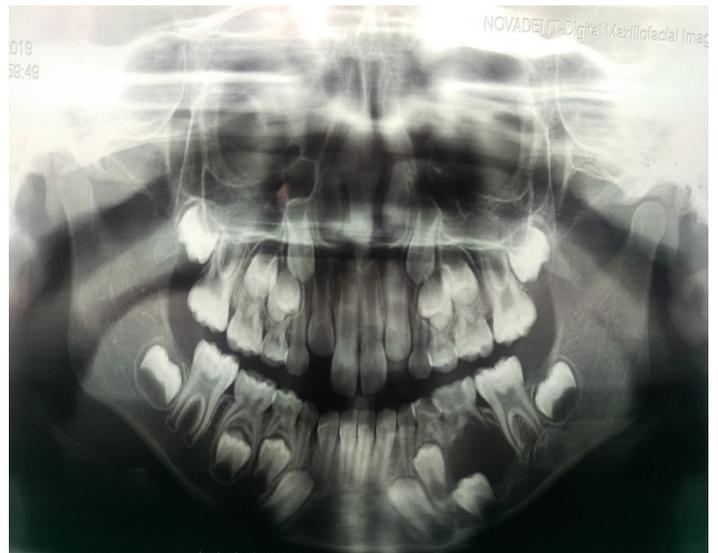


Fig 2: Panoramic Radiograph



Fig 3: IOPAR irt 75



Fig 6: Window created for cyst enucleation



Fig 4: Reflection of flap



Fig 7: Enucleated cyst and extracted tooth



Fig 5: Extraction of 75



Fig 8: Suture placement



Fig 9: Healing after one week

Enucleation was considered as the treatment of choice to favor an uneventful eruption of the affected tooth. Prior to the surgical procedure a routine blood examination was carried out and the results were within normal limits. Informed consent was obtained from the parent prior to surgical intervention under local anesthesia. The treatment procedure comprised of extraction of 75 thereby creating a window.(fig 5 & Fig 6) The flap was reflected along with the thinned out bone (fig 4). The contents of the cyst were enucleated(Fig 7) and the cavity was thoroughly irrigated to remove any residual fragments and debris. The cavity was then packed with absorbable gelatin sponge and the socket was closed with interrupted sutures.(Fig 8) The surgical specimens were sent for histopathological analysis to confirm the diagnosis of periapical cyst. The patient was prescribed chlorhexidine mouth wash for maintenance of good oral hygiene and was recalled after a week for suture removal.

### Histopathology

Histopathology revealed a thin non-keratinized epithelial lining and the underlying connective tissue. The lining in few layers were thick and showed an arcading pattern of proliferation. The connective tissue stroma was infiltrated with chronic inflammatory cells predominantly lymphocytes. Numerous budding capillaries lined by

endothelial cells were also observed in the section, suggestive of periapical cyst.

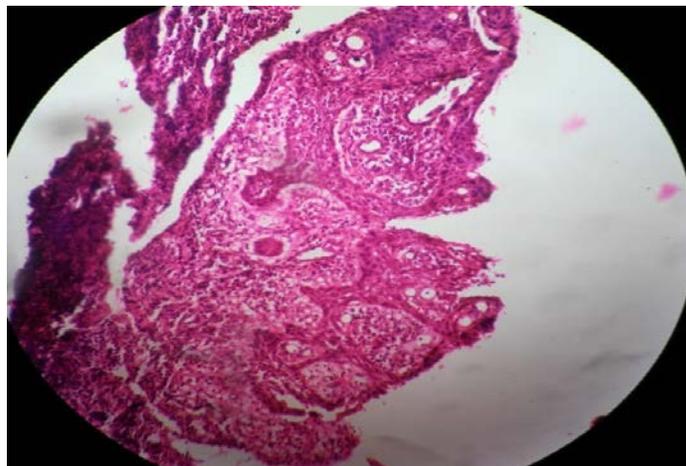


Fig 10:Histopathological view of radicular cyst

### Discussion

Radicular cysts originating from primary teeth are considered rare. The frequency is low because pulpal and periapical infections in deciduous teeth tend to drain more readily than those of permanent teeth and antigenic stimuli which evoke the changes leading to formation of radicular cyst may be different<sup>4</sup>. It has been believed that radicular cysts arise from the epithelial remnants in the periodontal ligament as a result of inflammation<sup>5</sup>. The cause for its rarity in primary dentition may be due to various reasons; for example:

- Periapical lesions resolve after removal of the tooth
- They remain untreated because of relatively less severe symptoms
- Due to diagnostic errors and nonreferral for pathologic examination
- Due to regression of the lesion after endodontic treatment<sup>4</sup>

This case was diagnosed as radicular cyst for the following reasons

- Presence of large radiolucent region in the root apex of non-vital primary tooth

- Predominant mandibular buccal cortical plate expansion
- Thin reactive cortex displacement of succedaneous tooth and surgical confirmation that the lesion was not associated with the successive permanent tooth
- Histological confirmation of cystic epithelial lining<sup>6</sup>

Grundy, Adkins, and Savage reported a series of radicular cysts associated with deciduous teeth that were treated endodontically with material containing formocresol which, in combination with tissue protein, is antigenic and has been shown to elicit a humoral and cell-mediated immune response<sup>7,8</sup>

The present case reports a radicular cyst associated with primary molar which was non-endodontically treated. Usually, the radicular cyst may mimic dentigerous cyst radiographically, but in this present case it was ruled out as it was associated with grossly decayed primary teeth.

Radicular cyst in deciduous dentition affects the mandibular teeth (as in this patient) because they are the ones most frequently affected by caries; in contrast, there is maxillary predominance in permanent dentition<sup>9</sup>

Most authors agree that the treatment of choice is enucleation of the cyst. Marsupialization is a more conservative intervention and is indicated when there is no likelihood of damaging anatomic structures. The major disadvantage of the marsupialization technique is that pathologic tissue is left in situ without thorough histologic examination and multiple visits are required for regular washing of the cavity and follow-up<sup>10</sup>. Moreover, in this present case, enucleation is preferred in order to confirm the histopathological confirmation of the diagnosis.

In children healing of postsurgical osseous defects is always good as they have high propensity for bone regeneration<sup>5</sup>.

## Conclusion

The reported case is one of the rare occasions of radicular cyst on primary dentition in a similar pattern to the earlier literatures. Early diagnosis and regular clinical as well as radiographic examination even in non-endodontically treated carious tooth in primary dentition is strongly recommended.

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