



## A RARE CASE OF RADICULAR CYST MIMICKING AN INFLAMMATORY DENTIGEROUS CYST IN A 6 YEAR OLD CHILD

### Dental Science

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### ABSTRACT

Radicular cysts are one of the most common odontogenic cyst of the jaws. However, those arising from primary teeth are rare. Purpose of this report is to present a case of a child with a radicular cyst mimicking an inflammatory dentigerous cyst. A 6-year-old boy reported to the Department of Pedodontics with the chief complaint of pain and swelling on the lower right primary molar tooth region. The clinical and radiological features of the present case gave an impression that it was a dentigerous cyst; however its histopathological features proved it was a radicular cyst. Considering the age, size of lesion and involvement of unerupted premolar marsupialization was preferred as a conservative treatment of choice. The success of the treatment was evident both clinically and radiographically during the follow-up period. In the case of a child, it is equally important to understand the possible sequelae and plan appropriate intervention in a timely and effective manner.

### KEYWORDS

Radicular cyst, Marsupialization

### INTRODUCTION

Children exhibit many pathological lesions, the frequency of odontogenic cysts that affect the maxillofacial region is relatively low. Radicular cyst being most common inflammatory lesion in children which is most common sequelae of dental caries<sup>1</sup>. Radicular cyst which is also called as 'Periapical cyst or apical periodontal cyst or root end cyst' which comprise about 52-68% of all the cysts. A radicular cyst is generally defined as a cyst arising from epithelial residual (cell rests of Malassez) in the periodontal ligament as consequence of inflammation, usually following the death of dental pulp<sup>2</sup>.

Radicular cyst are rare in primary dentition contributing about only 0.5 to 3.3% of the total number of radicular cysts in both the primary and permanent dentition<sup>3</sup>. In case of primary teeth, these cysts are most commonly associated with mandibular molars. It has been also reported that radicular cysts associated with primary incisor teeth are very rare<sup>4</sup>. Dental caries is the most common etiologic factor followed by traumatic injuries to primary teeth<sup>5</sup>. Most of the radicular cysts are asymptomatic and are discovered when radiographs are taken of the teeth with non-vital pulps, long standing, untreated cases may become symptomatic. These symptoms include swelling, tenderness, tooth mobility and bluish tinge of the overlying mucosa caused by buccal expansion of the cortical plates. In children it may cause delayed eruption, malposition, enamel defects or damaging of the developing permanent successors. In some cases, cyst may undergo an acute exacerbation of the inflammatory process and develop rapidly into abscess that may then proceed to a cellulitis or form a draining fistula<sup>7</sup>.

Radiographically, a radicular cyst appear as peri or para apical round or oval radiolucency of variable size, which is well defined and bordered by a thin rim of cortical bone<sup>6</sup>. Various treatment options include root canal therapy, cyst enucleation, extraction of the affected tooth and marsupialization for the decompression of larger cysts<sup>7</sup>.

### CASE REPORT

A 6 year old male patient reported to department of pedodontics and preventive dentistry, Rajarajeswari dental college and hospital, Bangalore with a chief complaint of decayed tooth in lower right back tooth region since 6 months which is associated with swelling since 2 month. Initially swelling was small in size and gradually increased in size over time. Patient had consulted a dentist for the same complaint 1 month back and was on antibiotic coverage for 3 days. No dental treatment was done for the same. There was no relevant medical history. The patient had no other associated symptoms with the swelling. On examination, extra-orally, a diffuse swelling was seen on right side of face measuring about 2 x 3 cms. which was extending from corner of mouth to lower border of mandible. On palpation, swelling was bony hard with mild tenderness. Localized rise in

temperature was seen. Intra-oral examination revealed caries involving enamel, dentin and approaching pulp in relation to 85 and presented with vestibular tenderness. The intra-oral lesion was rubbery and fluctuant on palpation. Buccal cortical plate expansion was seen in same region. Tenderness on vertical percussion was present and no mobility was seen in relation to 85. Root stump were seen in relation to 84 which was mobile. Other intra-oral findings include caries involving enamel, dentin and approaching pulp in relation to 64, 74 and 55. Root stump were seen in relation to 62 and 75. Caries involving enamel and dentin was seen in relation to 51, 52 and 63. Fusion was seen in relation to 71 and 72.

The OPG revealed a well-defined unilocular radiolucency in right mandibular posterior region measuring 3\*2 cm with continuous sclerotic border extending from the mesial surface of mandibular right permanent first premolar to the distal surface of mandibular right permanent first molar suggestive of a cyst. Tooth bud of 45 was embedded in the radiolucency OPG also reveals radiolucency involving enamel, dentin and approaching pulp and 3 roots in relation to 85. Fusion was seen in relation to 71 & 72. Physiological root resorption was seen in same region and radiolucency involving enamel, dentin and approaching pulp was seen in relation to 64, 74 and 55.

Based on the patient's history and clinical and radiographic examinations, the differential diagnosis of the lesion was radicular cyst or dentigerous cyst and the treatment plan was extraction of 85 followed by marsupialisation of cystic lining. Other treatments required for the patient consisted of pulp therapy followed by stainless steel crown with 55 and 74, extraction followed by space maintainer in relation to 84 and 75 and restorations in relation to 51, 52 and 63.

Management of cyst was planned using conservative approach considering the age of the patient, size of the lesion and erupting first premolar within cystic cavity. Consent form was signed by the patient's parents and the patient was scheduled for the extraction of 85 and marsupialization of cystic lining. On the day of extraction, standard disinfection protocols were followed and the area was anesthetized by inferior alveolar nerve block with Lidocaine HCl with 1:100000 epinephrine. Extraction of 3 rooted 85 was done, following that marsupialization of cystic lining through extraction socket. BIPP (bismuth iodoform paraffin paste) pack was placed to achieve hemostasis and to prevent hematoma formation. The patient was advised to maintain good oral hygiene and chlorhexidine mouth rinse was prescribed. Part of the affected tissue below the extracted molar was sent for histopathologic examination. The BIPP pack was changed on third day of the procedure. Follow up was done after one week which showed satisfactory healing and erupting 45. The patient was

then scheduled for the remaining required dental treatment.

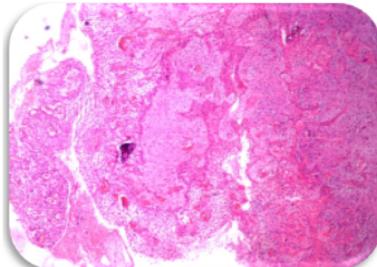
Histopathologic examination reveals a non-keratinized stratified squamous epithelium in an arcading pattern and connective tissue stroma with intense infiltration of inflammatory cells along with the engorged blood vessels which is suggestive of radicular cyst in relation to 85.



Pre operative photograph showing deep dentinal caries in relation to 85



Orthopantomograph (OPG) showing well-defined continuous sclerotic border in relation to lower right primary molar region



Histopathological features revealed a cystic lumen lined by stratified squamous epithelium



Photograph Extracted 85



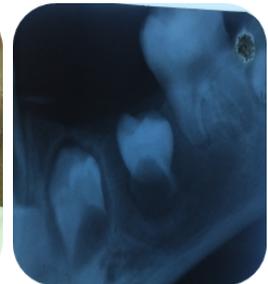
Marsupialization of the cystic lining was carried out



Photograph showing 1wk post op



Photograph and radiograph 2 months follow up



**DISCUSSION**

Radicular cysts are one of the most common odontogenic cysts of the jaw. However, those arising from primary teeth are rare but a permanent teeth embedded within the cyst are even more unusual. In present case, tooth bud of 45 was embedded within cystic cavity which is considered to be a rare occurrence. Shorter life span of primary teeth, easy drainage of inflammation due to accessory canals and neglected radiolucent findings in apical area of primary teeth can be the reasons for low incidence of radicular cyst in primary teeth than permanent teeth<sup>3,8</sup>. Radicular cyst found in primary teeth can resolve on their own after extraction or exfoliation of affected teeth, which may account for relatively smaller number of reported cases of radicular cyst in primary dentition. It is believed that radicular cyst is one which arises from the epithelial residues in the periodontal ligament as a result of inflammation. There will be necrosis of dental pulp followed by inflammation and cysts arising in this way are found most commonly at the apices of involved tooth. They are symptomless and are diagnosed during routine radiologic investigations<sup>9</sup>. This type of cyst arising from deciduous teeth reported to occur in age range of 3 to 19 years with male predominance. The most commonly involved deciduous teeth are mandibular molars (67%), maxillary molars (17%) followed by anterior teeth<sup>1</sup>. Radicular cysts generally originate after trauma or dental caries which leads to inflammation of the pulp cavity, leading to pulp necrosis. The infection then spreads to the apex of the root, causing periapical periodontitis, which leads to either an acute abscess or a chronic granuloma. Persistent chronic infection can lead to formation of a periapical cyst<sup>10</sup>. In the current case, patient had given a history of long standing dental caries in relation to 85 and it could be the probable etiology.

Radiographically, most radicular cysts appear as round or pear-shaped, unilocular, lucent lesions in the periapical region and are bordered by a thin rim of cortical bone as seen in present case. The associated tooth usually has a deep restoration or large carious lesion. The cyst may displace adjacent teeth or cause mild root resorption. In present case OPG also revealed tooth bud of 45 in well-defined radiolucency.

Several treatment options are available for treating radicular cyst such as endodontic treatment, extraction of the offending tooth, enucleation of cyst and marsupialization<sup>11</sup>. The treatment decisions are made based on various factors such as size and localization of the lesion, the proximity of the cystic wall to vital structures, clinical characteristics of the lesion, cooperation and systemic condition of the patient<sup>8</sup>. In present case, more conservative approach of treatment was used considering age of the patient and position of erupting first premolar. Large cyst in mixed dentition stage can cause problem because cystic pressure may lead to deviation of developing tooth buds. Considering the position of erupting first premolar marsupialization is best choice

of treatment in our case. As it was child's first dental visit, conservative approach for the treatment will also help in building positive attitude towards dental treatment. Marsupialization is favoured in case of children lower morbidity, preservation of permanent tooth bud and post-surgical high bone regeneration potential<sup>12</sup>. However, patient's corporation and regular follow-up visits are the key factor for successful outcome.

The further progression of an untreated or undiagnosed radicular cyst could be harmful to the patient's future dental development it may cause swelling, tenderness, tooth mobility and a bluish tinge caused by buccal expansion if cortical plates. Furthermore, it can cause displacement of the successor tooth. So early diagnosis of these cyst plays important role in avoiding further complications as well as the need for invasive surgical treatment<sup>1,13</sup>.

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