Case Report

Radicular Cyst Associated with Deciduous Molar Following Pulp Therapy: A Case Report

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ABSTRACT

Radicular cysts are considered rare in the primary dentition, comprising only 0.5-3.3% of the total number of radicular cysts in both primary and permanent dentitions. The aim of this case report is to present the clinical, radiographic and histological characteristics of radicular cyst associated with first primary molar following formocresol pulpotomy. Extraction and enucleation of the cyst was carried out under local anesthesia after elevation of the mucoperiosteal flap, which led to uneventful healing and the space of the missing primary molar was maintained using a band and loop space maintainer. The relationship between the intracanal medicaments used for pulp therapy and the rapid growth of these cysts that had been enumerated in the literature was noticed in this case. This does not imply that prohibition of medicaments for pulp treatment of primary teeth is necessary, but pulpotomy treated primary molars should receive periodic postoperative radiographic examination and absence of clinical symptoms does not mean that a pulpotomy treated tooth is healthy.

***Keywords*:** Periodontal cyst, primary teeth, pulpotomy, radicular cyst.

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Introduction

Children are victims of many pathological lesions involving the jaw bones. These lesions can be neoplastic, developmental or inflammatory in origin. Most common amongst the lesions of inflammatory origin is radicular cyst. Radicular cysts are considered to be rare in primary dentition with a prevalence of 0.5-3.3% in a survey of 1300 radicular cysts found in both primary and permanent dentitions.[1-3] Radicular cysts are usually asymptomatic and are left unnoticed, until detected by routine radiography.[4] A series of radicular cysts associated with pulpally treated primary teeth had been reported.[5] A relationship between intracanal medicaments used for pulp therapy and intraepithelial inclusions in the cystic walls, which might provide a site for continuing antigenic stimulation had been proposed.[6,7] The aim of this case report is to present the clinical, radiographic and histologic characteristics of radicular cyst associated with primary molar following formocresol pulpotomy and to discuss the relationship between pulp therapy and the rapid growth of these cysts.

Case Report

A 5 year-old boy was referred to the Department of Pediatric and Preventive Dentistry of Dental College with the chief complaint of painless swelling on the lower right posterior region of the mouth for the past two months. Past dental history revealed that the patient had undergone pulp therapy for the treatment of deep carious lesion in 84, about 1.6 years ago. Patient's records suggested that he had undergone formocresol pulpotomy followed by stainless steel crown in 84. Extra oral examination showed painless, bony hard swelling on the lower right side of the mandible. On intra oral examination, a well circumscribed swelling of about 1x1 cm was noticed in the right lower buccal sulcus

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extending from the distal aspect of 83 to the mesial aspect of 85 (Figure 1). The deciduous first molar was associated with Miller's grade two mobility. Periapical radiograph revealed well-defined unilocular radiolucency involving the interradicular area and extending beyond the confines of the roots of 84 but delineated from the follicle of developing first premolar (Figure 2). Occlusal radiograph confirmed the expansion of buccal cortical plate and thin reactive cortex (Figure 3). From history and clinical presentation, a provisional diagnosis of radicular cyst was made. The cystic site was exposed under local anesthesia after elevation of the mucoperiosteal flap, which exhibited expansion, thinning and perforation of buccal cortical plate (Figure 4). The cyst was enucleated along with the involved teeth and was sent for histopathologic examination. Surgical exploration confirmed the non-association of the cyst to the successive permanent teeth. Primary closure was done following

Figure 1. Bony hard, painless swelling in the right lower buccal sulcus.

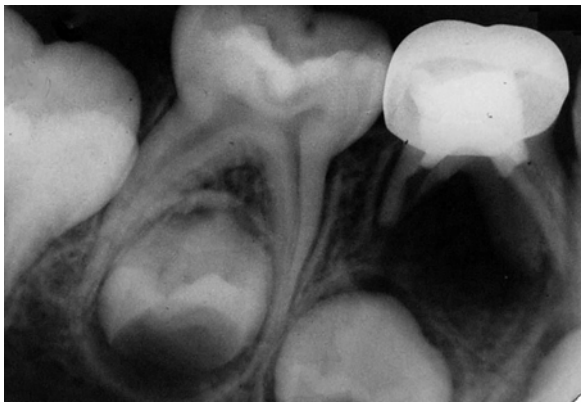

Figure 2. Unilocular radiolucency in the interradicular area.

Figure 3. Expansion of buccal cortical plate.

Figure 4. Cystic cavity depicting the non association of the cyst with the permanent tooth follicle.

Figure 5. Occlusal view of band and loop space maintainer.

debridement and hemostasis. Post-surgical healing was uneventful. Band and loop space maintainer was given after the removal of the sutures (Figure 5). The histologic examination revealed a cystic cavity lined by nonkeratinized epithelium with inflammatory cell infiltrates (Figure 6). This case was diagnosed as radicular cyst for the following reasons:

1. Painless radiolucent lesion in relation to roots of pulpotomized primary teeth.
2. No clinical, radiologic or surgical involvement with successive permanent tooth.
3. Histologic confirmation of the cystic epithelial lining.

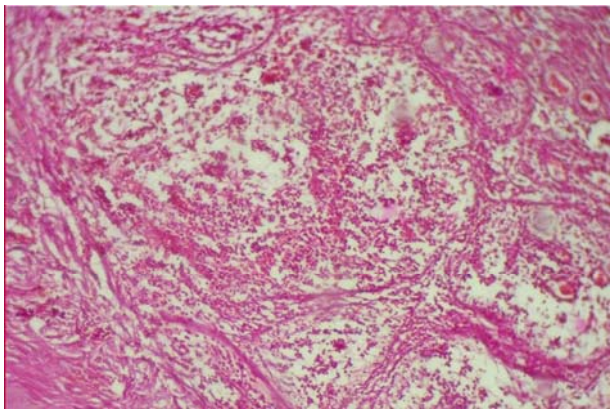

Figure 6. Histopathologic view of the cystic lesion.

Discussion

A radicular cyst is the one, which arises from the epithelial residues in the periodontal ligament as a result of inflammation. Very few cases of radicular cysts are seen in the first decade after which there is fairly a steep rise with a peak frequency in the third decade. There are several differences between radicular cyst arising from primary teeth and the one arising from permanent teeth:

1. Radicular cysts of primary teeth are located in the interradicular area and around the roots whereas those of permanent teeth are found at the apex. This may be due to the presence of accessory canals and short partially resorbed roots of primary teeth.[8]
2. Increased prevalence of radicular cyst in the primary dentition is seen in the mandibular arch because these teeth are frequently involved by caries and caries is the most common etiological factor for the occurrence of these cysts. In permanent teeth, maxillary incisors are frequently involved due to trauma, caries and old silicate restorations.[1]
3. Histologically, there is no difference between the cysts of primary teeth and those of permanent teeth except for rarity of cholesterol crystal slits in primary teeth cysts. This is due to the fact that the lesion associated with the primary teeth exist for shorter duration before removal in comparison to permanent teeth.[1,8]
4. The prevalence of radicular cyst is higher than that reported in literature because:

a) Radicular radiolucency related to primary teeth tends to be neglected and are resolved after removal of the tooth.[1]
b) Radicular infections drain more readily through sinus/fistula formation causing less severe symptoms[8] and the antigenic stimuli, which evoke the changes leading to formation of radicular cysts may be different.[9]
c) Unlike cyst of permanent teeth, primary teeth are extracted but not submitted for histopathologic examination.[8]
d) Regression of the lesion after endodontic treatment.[10]

The growth rate of radicular cyst estimated by Livingston (1927) and Hill (1987) were 5 and 4 mm, respectively.[11,12] The growth rate of the cyst in this case was quite high. Formocresol in combination with tissue proteins may be antigenic and could elicit immune reaction leading to expansion or development of the cyst.[13] Grundy et al (1985) showed that this could be the reason for the rapid growth of the cyst,[5] as was noticed in this case. This does not imply that prohibition of medicaments for pulp treatment of primary teeth is necessary, but based on these data, pulpotomy treated primary molars should receive periodic postoperative radiographic examination and absence of clinical symptoms does not mean that a pulpotomy treated tooth is healthy. Various treatment modalities that are advocated for cystic lesions are enucleation, enucleation with curettage, marsupialization, and marsupialization with enucleation. Other treatment modalities include, removable or fixed resin tubes followed by saline irrigation after each meal to prevent fibrous healing and to promote decompression and the use of removable acrylic partial dentures for decompression and space maintenance.[4,10] In this case the possible etiological factor for the cyst initiation could be either, the pulpal remnants that were left during previous treatment or the antigenic stimulation of formocresol. From the above case report, there appears a possibility that intracanal medicaments may stimulate the apical area, affect the permanent teeth, or develop/expand the cyst.[14] No other area in the field of pedodontics is as controversial as pulpotomy, especially the use of formocresol as a pulpotomy agent. Hence, further research is necessary to rule out the relation of formocresol in initiating cystic

reaction. Shown the severity of the lesion, it is prudent to always implement a follow up protocol whenever pulp treatment is performed.

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