

Two infected primary molars resulting in a radicular cyst

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ABSTRACT

Early diagnosis and treatment of inflammatory radicular lesions associated with deciduous teeth is imperative as it can lead to bony expansion and may adversely affect underlying permanent successor. Histopathologically, these lesions may be radicular granulomas, radicular granulomas with epithelium or a radicular cyst if an epithelial lined lumen is present. They may be associated with severely decayed teeth or teeth which had undergone pulp therapy. We present three case reports of such lesions which were treated under local anesthesia on an outpatient basis.

Keywords: enucleation, primary molars, radicular cyst.

INTRODUCTION

The radicular radiolucencies relating to primary teeth are often neglected and this often leads to the absence of any histopathological examinations.¹ The histopathology of furcation lesions associated with cariously exposed primary teeth has been described.^{1,2} These lesions are mixed inflammatory reactions with the chronic granulomatous inflammatory reaction being the predominant type observed. These lesions may contain epithelium suggesting the potential for cystic transformation.² Radicular cysts are odontogenic cysts which are derived from the inflammatory activation of epithelial root sheath residues (cell rests of Malassez). They are inflammatory in nature and usually arise within a periapical granuloma relating to stimulation resulting from a necrotic tooth.³ In the past, occurrence of radicular cysts in the primary dentition has been considered as rare.^{4,5} Radicular cysts are rare in the primary dentition, representing only 0.5–3.3% of the total number in both primary and permanent

dentitions.⁶ Lustmann and Shear in an extensive review from 1898 to 1985, found only 28 cases to which they added 23 cases and prevalence of radicular cysts in primary dentition was reported to be less than 1%.¹ However, Mass et al analysed 49 primary molar teeth with radiolucent lesions ranging from 4-15 mm in diameter and 73.5% of all lesions were diagnosed as radicular cysts and 26.5% as granulomas.⁷ Various reasons cited for this relative rarity include presence of deciduous teeth for a short time, easy drainage in deciduous teeth due to the presence of numerous accessory canals and a radicular radiolucency in relation to deciduous teeth are usually neglected. Additionally, the lesions tend to resolve on their own following the extraction/exfoliation of the associated tooth and are generally not submitted for histopathological examination.⁸⁻¹⁰ We report three cases each of radicular cyst associated with infected deciduous molars.

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CASE-1

A 8 year old girl reported to the Department of Paedodontics and Preventive Dentistry, Post Graduate Institute Of Dental Sciences, Rohtak with a chief complaint of swelling in relation to lower left back teeth region since 3 months. There was no significant dental and medical history. Extraoral examination showed painless, bony hard swelling on the lower left side of face. Intraoral examination revealed grossly carious mandibular left primary first and second molar and a swelling of about 1.5 cm X 1.5 cm extending from mesial aspect of 74 to distal aspect of 75 obliterating the vestibule. Panoramic radiograph of the patient showed a well circumscribed unilocular radiolucency extending from distal aspect of 73 to distal aspect of 75 anteroposteriorly, also involving the crown portion of the permanent second premolar tooth bud. [Figure1a].



Figure 1a:Preoperative panoramic radiograph showing a well circumscribed unilocular radiolucency, also involving the crown portion of the permanent second premolar toothbud.

Provisional diagnosis of radicular cyst was made. Enucleation of cyst and extraction of deciduous first and second molars under local anaesthesia was planned. The extraction of deciduous first and second molars was done which opened pus filled cystic cavity and the cyst was enucleated. A part of the wall was sent for histopathological examination which confirmed the diagnosis of radicular cyst. Iodoform dressing was given in the enucleated area next day and dressing was changed twice weekly till healing occurred. Lingual arch space maintainer was given after extraction of decayed teeth. Patient was kept on follow up and was examined clinically and

radiographically. Extraoral swelling subsided in one month and the panoramic radiograph showed uneventful bone formation in the concerned area after 12 months follow up [Figure 1b].



Figure 1b: Postoperative orthopantomogram showing uneventful bone formation.

CASE -2

A 7 year old boy reported to our department with the history of pain and swelling in relation to right lower back teeth region since 2 months. Extraoral examination of patient showed a bony hard swelling in the same area. Intraoral examination showed grossly carious lower deciduous first and second molars bilaterally, of which right side teeth were tender on percussion. A swelling extending from mesial aspect of 83 to distal aspect of 85 obliterating the vestibule was evident intraorally. Intraoral periapical radiograph showed radiolucency extending from mesial of 83 to the furcation area of 85 and root resorption of the involved teeth [Figure 2a]. In mandibular occlusal radiograph buccal cortical bone expansion in the same area was evident [Figure 2b]. After extraction of lower right deciduous canine, first and second molars under local anaesthesia, surgical enucleation of the cyst was done. Iodoform dressing was given and a removable obturator was placed over it to prevent any food lodgement. Extraoral swelling subsided in 1 month and bone formation was evident in intraoral periapical [Figure 2c] and occlusal radiographs [Figure 2d] after 3 months. The patient is kept on follow-up for monitoring healing, bone formation and eruption of the permanent teeth.

Case Report



Figure 2a: Preoperative Intraoral periapical radiograph depicting radiolucency

Figure 2b: Preoperative mandibular occlusal radiograph showing buccal cortical bone expansion



Figure 2c: Postoperative Intraoral periapical radiograph

Figure 2d: Postoperative mandibular occlusal radiograph

CASE-3

A 7 year old boy reported to the department with the history of pain and swelling in relation to right lower back teeth region since 2 months. He had undergone extraction of grossly carious mandibular deciduous right first molar in a private clinic for the same but the swelling did not resolve. On examination, a bony hard swelling on lower right side of mandible was noticed extraorally [Figure 3a] and intra-oral examination revealed grossly carious mandibular deciduous second molars bilaterally and root stumps of mandibular deciduous left first molar and expansion of right buccal cortical plate. Panoramic radiograph revealed a well defined round unilocular radiolucency extending from distal of unerupted first premolar to distal of first permanent molar involving half crown portion of developing second premolar [Figure 3b]. Same treatment procedure was followed and the cystic wall was sent for histopathological examination which confirmed it to be radicular cyst. [Figure 3c]. Extra-oral swelling subsided within one month [Figure 3d] and three months postoperative panoramic radiograph shows formation of bone

in the concerned area [Figure 3e]. The patient is kept on follow-up.



Figure 3a: Preoperative extraoral picture depicting swelling on lower right side of mandible.



Figure 3b: Preoperative panoramic radiograph showing unilocular radiolucency extending from distal of unerupted first premolar to distal of first permanent molar involving half crown portion of developing second premolar



Figure 3c: Enucleated cyst

Figure 3d: Postoperative extraoral picture with resolution of swelling.



Figure 3e: Postoperative panoramic

DISCUSSION

Radicular cyst and granuloma are the most common among the lesions of inflammatory origin. Radicular cysts associated with deciduous teeth are reported to occur in age range of 3–19 years with a male preponderance.^{1,8} The most commonly involved deciduous teeth are mandibular molars (67%), maxillary molars (17%) followed by anterior teeth.⁸ The etiologic factor most commonly implicated is dental caries followed by trauma. Role of formocresol in initiating cystic reaction has been reported by several authors. Formocresol, along with tissue proteins, is antigenic and elicits a humoral and cell mediated response.⁹⁻¹³

Since the lesions associated with pulpotomy-treated teeth are essentially the same histologically as the lesions associated with primary molars which had furcation lesions without pulp treatment, the lesions cannot be specifically attributed to the use of formocresol.¹³

More recently it has been reported that pulp therapy in the form of calcium hydroxide/iodoform (non-phenol) may also be responsible for the stimulation of radicular cysts in primary molars.¹⁴ This does not imply that prohibition of medicaments for pulp treatment of primary teeth is necessary, but based on these data primary molars after pulp therapy should receive periodic postoperative radiographic examination.

Radicular cysts are thought to increase in size no more than 4 mm per year and usually remain asymptomatic providing there are no acute inflammatory exacerbations.¹⁵ The sequelae of an untreated or undiagnosed radicular cyst could be harmful to the patient's future dental development. A patient with an untreated radicular cyst may present with the following: swelling, tenderness, tooth mobility and a bluish tinge caused by buccal expansion of the cortical plates.^{14, 15} Furthermore, displacement of the successor tooth or, the loss of its vitality may result.¹⁶

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.

We have reported three cases where the infected primary molars have led to a radicular cyst formation in young children which necessitated extraction of primary molars. The root resorption of molars due to pressure effect of cyst was evident in case one and two.

The permanent successor erupted in the dental arch despite severe displacement in case 3 which needs orthodontic treatment for alignment. Each case should be monitored clinically and radiographically for premolar alignment and healing of osseous defect. Simultaneous with the eruption of permanent teeth, ossification of the bony defect can take place. The reparatory process is completed in one to two years. In children, healing of post surgical osseous defects is always good as they have high propensity for bone regeneration.

CONCLUSION

Given the severity of sequelae of the radicular radiolucent lesion associated with deciduous teeth it is prudent to timely detect and treat these lesions.

REFERENCES

1. Lustmann J, Shear M. Radicular cyst arising from deciduous teeth- review of literature and report of 23 cases. *Int J Oral Surg* 1985; 14:153–161.
2. Myers DR, Battenhouse MR, Barenie JT, Mc Kinney RV, Singh B. Histopathology of furcation lesions associated with pulp degeneration in primary molars. *Pediatr Dent* 1987; 9: 279–282.
3. TenCate A R. The epithelial cell rests of Malassez and the genesis of the dental cyst. *Oral Surg Oral Med Oral Pathol* 1972; 34(6): 956-64.
4. Hill FJ. Cystic lesions associated with deciduous teeth. *Proc Br Paedod Soc* 1978; 8:9-12.
5. Main, DM. Epithelial jaw cysts: a clinicopathological reappraisal. *Brit J Oral Surg* 1970; 8(2): 114-25.

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6. 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; 24:158–160.
7. Mass E, Kaplan I, Hirshberg A. A clinical and histopathological study of radicular cysts associated with primary molars. *J Oral Pathol Med* 1995; 24: 458–461.
8. Nagata T, Nomura J, Matsumura Y, Yanase S, Fujii T, Oka Tet al. Radicular cyst in a deciduous tooth: a case report and review of literature. *J Dent Child* 2008; 75: 80–84.
9. Gandhi S, Franklin DL. Presentation of radicular cyst associated with a primary molar. *Eur Arch Paediatr Dent* 2008; 9:56–59.
10. Savage NW, Adkins KF, Weir AV, Grundy GE. A histological study of cystic lesions following pulp therapy in deciduous molars. *J Oral Pathol Me* 1986; 15: 209–212.
11. Rodd HD, Boissonade FM. Immunocytochemical investigation of immune cells within human primary and permanent tooth pulp. *Int J Pediatr Dent* 2006; 16: 2–9.
12. Grundy GE. Cysts associated with deciduous molars following pulp therapy. *Aust Dent J* 1984; 29: 249–25.
13. Myers DR, Durham LC, Hanes CM, Barenie JT, Mc Kinney RV. Histopathology of radiolucent furcation lesions associated with pulpotomy-treated primary molars. *Pediatr Dent* 1988; 10:291–294.
14. Takiguchi M, Fujiwara T et al. Radicular cyst associated with a primary molar following pulp therapy: a case report. *Int J Paediatr Dent* 2001; 11(6):452-5.
15. Smith AT, Cowpe JG. Radicular cyst arising from a traumatized primary incisor; a case report of a rare complication that emphasizes the need for regular follow-up. *Dent Update* 2005; 32:109–110.
16. Lustig, JP, Arad SD et al. Odontogenic cysts related to pulpotomized deciduous molars: clinical features and treatment outcome. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1999; 87(4): 499-503.