Radicular Cyst in Deciduous Maxillary Molars: A Rarity

Shibani Shetty · Punnya V. Angadi ·
K. Rekha

Received: 3 February 2009 / Accepted: 17 March 2009 / Published online: 25 November 2009
© Humana 2009

Abstract Radicular cyst arising from deciduous teeth is exceedingly rare accounting for <1% of all radicular cysts. A total of 122 cases have been reported to date in the English language literature. We present a rare case of a radicular cyst associated with a decayed deciduous maxillary molar tooth without any history of prior pulp therapy. Our aim is to emphasize the recognition of inflammatory radicular lesions associated with deciduous teeth which may adversely impact underlying permanent successor.

Keywords Radicular cyst · Deciduous molar · Caries · Pulp therapy

Introduction

Radicular cysts are common inflammatory odontogenic cysts arising from epithelial residues (i.e. rest of Malassez) due to perapical periodontitis following death and necrosis of pulp [1]. They are usually encountered in association with permanent teeth; however, occurrence in relation to deciduous teeth seems to be very rare [1–3]. A recent review of the literature shows the total cases reported through 2004, to be about 112 and attributes 56% of them to be in response to pulp therapy [2]. We present an

additional rare case of a radicular cyst associated with a decayed deciduous tooth without any history of prior pulp therapy.

Case Report

An 11 year old boy presented with a 15 day history of an asymptomatic swelling of the left face. Extraorally, the swelling was diffuse, nontender, bonyhard and measured around 3 × 3 cm in the left infraorbital region. Intraorally, an irregular bony hard swelling extending from the left maxillary canine to second molar area was seen (Fig. 1).

The radiograph revealed a well defined radiolucency surrounding the crowns of developing maxillary left first and second premolars and apical to grossly decayed deciduous first and second molars with displacement of the premolars (Fig. 2). A provisional diagnosis of dentigerous cyst was considered and the cyst was enucleated. Intraoperatively, it was seen that the developing premolars were outside the cyst cavity, so they were preserved in situ. The cyst was enucleated along with extraction of decayed deciduous molars (Fig. 3a).

Microscopically, a densely inflamed cyst wall covered by a varying thickness nonkeratinized epithelial lining exhibiting arcing in areas was seen indicative of radicular cyst (Fig. 3b).

Discussion

Radicular cysts associated with deciduous teeth (RCDT) are considered exceptionally rare. Shear [1] reported that they account for less than 1% of all cases, while Lustmann et al. [3] in an extensive review from 1898 to 1985, found

S. Shetty · K. Rekha
Department of Oral Pathology and Microbiology, S.D.M College
of Dental Sciences and Hospital, Dharwad 580 009,
Karnataka, India

P. V. Angadi (✉)
Department of Oral Pathology and Microbiology, KLEVK
Institute of Dental Sciences and Hospital, Belgaum 590010,
Karnataka, India
e-mail: punnya_angadi@rediffmail.com

Fig. 1 Clinical photograph depicting swelling in relation to left deciduous maxillary molars (a). Intra-operative view after exposure of the cyst (b)

Fig. 2 Radiograph revealed a well defined radiolucency (*) surrounding the crowns of developing maxillary left first and second premolars and apical to grossly decayed deciduous first and second molars with displacement of the premolars

only 28 cases to which they added 23 cases. Nagata et al. [2] in their review, report that there were 112 cases reported through 2004. Since then, there have been several

Fig. 3 Enucleated cystic specimen along with the extracted deciduous molars (a). Photomicrograph showing a non-keratinized cystic lining exhibiting arcading pattern covering an inflamed cyst wall (b, H&E, Original magnification $\times 250$)

individual case reports (11 cases) including the present case making the total number to approximately 123 [4–11] (Table 1).

However, according to Mass et al. [12] and Deblen et al. [13], 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.

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 [2–15]. A possibility of difference in the biologic activity of pulp in primary and permanent teeth has also been considered

Table 1 Update of case reports of radicular cysts associated with deciduous teeth since Nagata et al.'s review

Author and year	Age/sex	Location	Etiology
Caldwell [4]	12 Years/M	Mandibular deciduous molar	Pulp therapy
Caldwell [4]	5 Years/M	Maxillary deciduous molar	Pulp therapy
Bhatt [5]	9 Years/M	Mandibular deciduous molar	Pulp therapy
Smith [6]	3 Years/M	Maxillary central incisor	Trauma
Al-Khayat [7]	8 Years/M	Maxillary central incisor	Trauma
Johann [8]	9 Years/M	Maxillary deciduous molar	Dental caries
Ramakrishna [9]	9 Years/M	Mandibular deciduous molar	Pulp therapy
Chiu [10]	10 Years/M	Mandibular deciduous molar	Pulp therapy
Chiu [10]	11 Years/M	Mandibular deciduous molar	Pulp therapy
Gandhi [11]	9 Years/F	Mandibular deciduous molar	Dental caries
Present case	11 Years/M	Maxillary deciduous molar	Dental caries

M male F female

[1, 2]. However, this is debatable. Rodd et al. [16] reported that although the number of immunocompetent cells in the dental pulp of the primary teeth is significantly higher than in the permanent teeth; there was no difference noted in the inflammatory reaction in response to caries in both primary and permanent tooth [2].

Preoperative misdiagnosis is an additional problem, as these cysts are frequently mistaken for a dentigerous cyst associated with permanent successors [2, 3]. A comprehensive assessment regarding the position of the permanent tooth germ with radiographic and surgical evaluation followed by a confirmatory histopathologic appraisal may aid in the correct diagnosis. This distinction though very difficult and in some cases not possible, is vital as we can prevent the unwarranted extraction of the permanent successor.

RCDT are reported to occur in age range of 3–19 years with a male preponderance [2, 3]. The most commonly involved deciduous teeth are mandibular molars (67%), maxillary molars (17%) followed by anterior teeth [2]. Our case corroborated with the age and sex predilection and occurred in relation to deciduous maxillary molar teeth.

The etiologic factor most commonly implicated is dental caries followed by trauma. However, several authors [17, 18] have documented cases of RCDT following pulp therapy using materials containing formocresol which, along with tissue proteins, is antigenic and elicits a humoral and cell mediated response [11, 13, 14, 16, 17]. Some of these cysts in their series showed rapid buccal expansion and non-refractile eosinophilic material in their epithelial linings. Nagata et al. in their review, report 56% of the total cases of RCDT were following pulp therapy (2). In the recent case reports also (Table 1), endodontic treatment accounted for the etiology for 6 cases, followed by caries (3) and trauma (2). In our case, there was no pulp therapy done and the cyst was associated with grossly decayed deciduous teeth, signifying caries to be the source.

To conclude, we present a rare case of radicular cyst associated with deciduous molars. Recognition of the

potential of radicular cysts to form in association with deciduous dentition is important for prevention of adverse effects to the underlying permanent successor.

References

1. Shear M. Cysts of the oral region. 2nd ed. UK: Butterworth-Heinemann Ltd, John Wright & Sons; 1983.
2. Nagata T, Nomura J, Matsumura Y, Yanase S, Fujii T, Oka T, et al. Radicular cyst in a deciduous tooth: a case report and review of literature. *J Dent Child*. 2008;75:80–4.
3. Lustmann J, Shear M. Radicular cyst arising from deciduous teeth- review of literature and report of 23 cases. *Int J Oral Surg*. 1985;14:153–61.
4. Caldwell RE, Freilich MM, Sandor GK. Two radicular cysts associated with endodontically treated primary teeth: rationale for long term follow-up. *Ont Dent*. 1999;76:29–33.
5. Bhatt SS, Vidhya M, Sargod S. Radicular cyst associated with endodontically treated deciduous tooth: a case report. *J Indian Soc Pedo Prev Dent*. 2003;21:139–41.
6. 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;32:109–10.
7. Al-Khayat AS, Davidson LE. Complications following replantation of a primary incisor: a cautionary tale. *Br Dent J*. 2005;198:687–8.
8. Johann AC, Gomes Cde O, Mesquita RA. Radicular cyst: a case report treated with conservative therapy. *J Clin Pediatr Dent*. 2006;31:66–7.
9. Ramakrishna Y, Verma D. Radicular cyst associated with a deciduous molar: a case report with unusual clinical presentation. *J Indian Soc Pedo Prev Dent*. 2006;24:158–60.
10. Chiu Wk, Sham ASK, Hung JNM. Spontaneous alignment of permanent successors after enucleation of odontogenic cysts associated with primary teeth. *Br J Oral and Maxillofac Surg*. 2008;46:42–5.
11. Gandhi S, Franklin DL. Presentation of radicular cyst associated with a primary molar. *Eur Arch Paediatr Dent*. 2008;9:56–9.
12. 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.
13. Deblem ACB, Cunha RF, Veira AEM, Pugilesi DMC. Conservative treatment of a radicular cyst in a 5- year old child- a case report. *Int J Pediatr Dent*. 2003;13:447–50.

14. Savage NW, Adkins KF, Weir AV, Grundy GE. A histological study of cystic lesions following pulp therapy in deciduous molars. *J Oral Pathol Med*. 1986;15:209–12.
15. 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;9:279–82.
16. Rodd HD, Boissonade FM. Immunocytochemical investigation of immune cells within human primary and permanent tooth pulp. *Int J Pediatr Dent*. 2006;16:2–9.
17. Grundy GE. Cysts associated with deciduous molars following pulp therapy. *Aust Dent J*. 1984;29:249–56.
18. 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;10:291–4.