

Radicular Cyst associated with Deciduous Molar: A Clinical Case Report

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ABSTRACT

An association of radicular cyst with deciduous teeth is very rare contributing to 0.5–3.3% of the total number of cysts in deciduous dentition in 3–19 years of age. This paper describes the case of a radicular cyst associated with deciduous molar in a 9-year-old female patient, with a detailed description of clinical, radiographic, histopathologic features, and its surgical management. The treatment included complete enucleation of the cyst with proper curettage, extraction of the offending deciduous molar and preservation of the permanent tooth buds.

Keywords: *Deciduous molar; enucleation, radicular cyst.*

INTRODUCTION

Odontogenic cysts can be classified according to etiology as developmental and inflammatory cysts. Under inflammatory type are radicular cysts and lateral periodontal cysts.¹ The radicular cysts develop from the cystic degeneration of cell rests of malassez and are the most common type of cystic lesions comprising about 52.3% of jaw cysts and 62% of cysts of odontogenic origin.² However, their association with primary dentition is rare, accounting for only 0.5-3.3% of the total number of cysts in deciduous dentition.³

The radicular cysts are accidentally encountered during routine radiographic examinations and are usually asymptomatic, associated with primary teeth in children that may cause bony expansion and resorption, delayed eruption, malposition or damage to the developing permanent successors.³ There are various modes of treatment available for radicular cyst management including surgical and no-surgical procedures, in this case

report we present surgical management which included complete enucleation of the cyst with extraction of the associated primary teeth and preservation of the permanent teeth, being the foremost appropriate treatment choice.

CASE REPORT

A 9-year-old female patient presented to the department of Pediatric and Preventive Dentistry with a chief complain of mobile teeth in the lower right back teeth region of the jaw since 6 months with no history of pain or swelling in that area and extraoral examination was non-significant.

Intraoral examination revealed grade II mobility in 84 and 85; dental caries in 74, 36; root stump of 75; restorations in 16, 26 and 85; stainless steel crown in 55 and 46; class I molar relationship on both sides and poor oral hygiene.

Radiographic investigation included intra-oral periapical radiograph for 84 and 85 which revealed radiolucency apical to 85 (Figure 1). For further extended view of the radiolucent area, orthopantomogram was taken which revealed an ill-defined hypo attenuated radiolucent lesion apical to 85 extending from mesial surface of tooth bud 44 till the distal surface of 45 (Figure 2). Differential diagnosis according to the radiographs were suggestive of radicular cyst as the radiolucent lesion was located apical to the primary tooth structure.

For a definite diagnosis for extension of lesion size and proximity to the surrounding structures cone beam computed tomography was done (Figure 3-5). It revealed

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Figure 1. IOPAR of teeth 84 and 85.



Figure 2. Orthopantomogram showing radiolucency in 84 and 85 region.

a radiolucent lesion of size approximately 13.23mm antero-posteriorly, 15.8mm superior-inferiorly and 12.8mm bucco-lingually. There was minimum cortical bone expansion, thinning and erosion of the buccal cortical plates and the mental foramen was seen inferior to the cystic lesion with no evidence of root resorption/displacement of the adjacent tooth or the involved tooth buds.

Surgical extraction of the offending deciduous teeth followed by enucleation of the cystic lesion was planned under local anesthesia as the patient was cooperative. Consent was taken from the patient's parents and surgery

was planned and scheduled under local anesthesia.

The surgical area was cleaned and local anesthesia was administered. Extraction of 84 and 85 was done. Following that, releasing incision was given and mucoperiosteal flap was reflected. Enucleation of the cystic lesion was done along with exposure of the tooth buds 44 and 45 (Figure 6). The gross specimen included multiple pieces of soft tissue which was brownish white in color, firm in consistency measuring 2.5 x 2cm in size was sent for histopathological evaluation (Figure 7). The surgical site was irrigated, cleaned and interdental sutures with resorbable 3-0 round body suture were given (Figure 8).

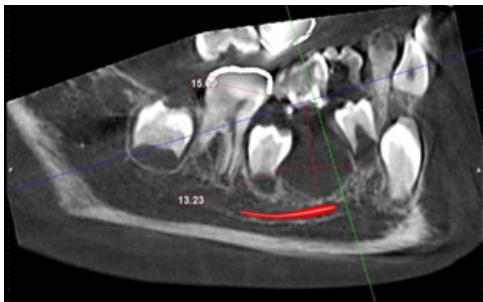


Figure 3: CBCT showing radiolucent lesion of size approximately 13.23mm antero-posteriorly, 15.8mm superior-inferiorly and 12.8mm bucco-lingually.

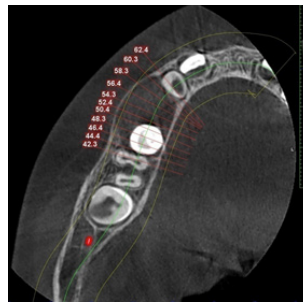


Figure 4: CBCT depicting minimum cortical bone expansion, thinning and erosion of the buccal cortical plates

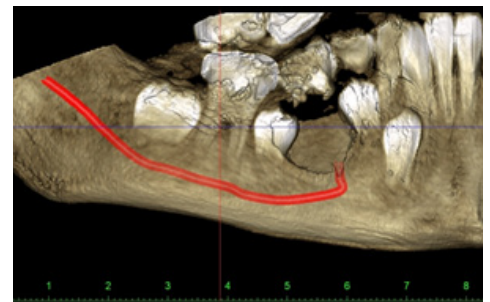


Figure 5: CBCT depicting the mental foramen which is seen inferior to the cystic lesion



Figure 6: Removal of cystic lesion with preservation of tooth bud 44 and 45.

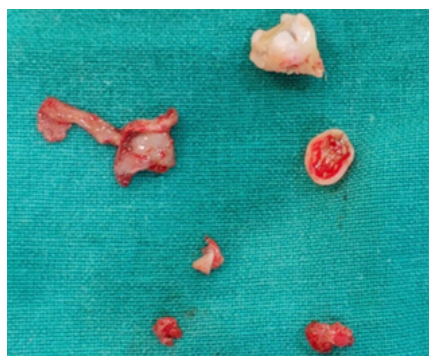


Figure 7: Gross specimen including the cystic mass, tooth 84 and 85.



Figure 8: Interdental sutures placed with resorbable 3-0 round body sutures.

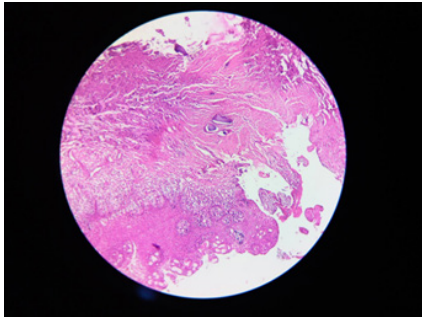


Figure 9: Histology of the cystic lesion at 10X magnification.



Figure 10: Follow up after 3 weeks.

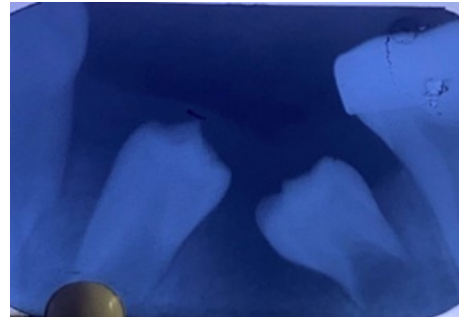


Figure 11: IOPAR after 3 weeks depicting the erupting tooth 44 and 45.

In the histopathological evaluation, arcading pattern of non-keratinized stratified squamous epithelium was seen. Densely arranged collagen fibers with inflammatory cell infiltrates such as lymphocytes and plasma cells were appreciated. Few areas also revealed Russell's body and foamy cells (Figure 9). Thus, a final diagnosis of radicular cyst was made.

First and second premolar showed continued development and complete bone regeneration in the cystic region was observed on the following 3 weeks and 3 months follow up sessions (Figure 10, 11).

DISCUSSION

Radicular cysts originating from primary teeth are considered as a rare entity.⁴ According to Mass E et al.² (1995) the prevalence of radicular cysts associated with primary molars is probably higher than that reported as due to the shorter duration of primary teeth in the jaws and pathological evaluations are not done after its extraction. In a survey, 73% of all the radiolucent lesions associated with primary molars were diagnosed as radicular cysts.²

These cysts are diagnosed either during a routine radiographic examination or following an acute exacerbation, like in our case it was diagnosed during radiographic examination for primary tooth mobility.⁵ The reason for its rare occurrence may be that the pulpal and periapical infection in deciduous teeth tend to drain more rapidly than those of permanent teeth⁴ and that radicular radiolucencies related to primary teeth tend to be ignored and often resolve after the extraction of the tooth.²

These cysts of primary teeth are reported to have a male predominance with an age range of 3–19 years.⁶ In this case, the patient was a 9-year-old female which

is considered to be a rare occurrence.⁶ The growth rate of radicular cyst associated with primary teeth has been reported to be 4 mm annually² and considering the size of the lesion and patient's age, we suspect rapid growth of the cyst in this case.

Mandibular molars are frequently affected by caries and are thus a favored site for the development of radicular cyst,³ similar to our case where the tooth 85 was restored (deep caries management was done 4 years back), with cortical bone being thick in this region, making the drainage through the sinus tract quit difficult.²

The common clinical signs of radicular cysts are radiolucent lesion present apical to the involved tooth, expansion of the buccal cortical plate, displacement of permanent successor and these clinical signs were observed in our case.⁴ In children, formation of cysts may cause bony expansion and resorption, delayed eruption, malposition or damaging of the developing permanent successors.³

The histological characteristics of radicular cysts includes a cystic cavity lined by nonkeratinized stratified squamous epithelium, cells of the epithelial lining showing arcading pattern with intense chronic inflammatory infiltrate along with mucous-producing cells within the epithelial lining.⁷ This particular finding was observed in the current case as well. The underlying connective tissue in radicular cyst is infiltrated by chronic inflammatory cells; predominantly lymphocytes and plasma cells.⁷ All these histological findings were also observed in our case confirming it to be radicular cyst..

The criteria for the proper selection of treatment options of radicular cyst depends upon the lesion in relation to vital structures, its clinical presentation, systemic and

medical condition of the patient.¹ The management of radicular cysts includes various procedures such as non-surgical endodontic treatment of the causative tooth, marsupialization, and surgical enucleation.⁸

Enucleation is the process where the cystic lining is separated and enucleated from its inner bony surface allowing blood to fill the defect and begin the healing process. It allows the complete removal of the pathologic tissue without it being left insitu, along with specimen for histopathological evaluation.⁶ Children have high propensity for bone regeneration and faster healing of the post-surgical osseous defects can be expected.² According to a study, alignment of the permanent teeth occurred spontaneously even if their initial positions were highly unfavourable.⁹ Thus considering all the above features, in this case, enucleation of the cyst was done based on the cyst size and the need for a complete histopathological examination.

Among the great advances in technology, endodontic microsurgical techniques are being utilized for direct cyst

enucleation while preserving the adjacent teeth vitality, thus serving an excellent treatment modality for young patients.⁸ Large cystic bony defects may lead to possibility of pathological fracture; hence nowadays several materials are used for healing augmentation, such as platelet-rich fibrin (PRF) enriched with growth factors.¹⁰

CONCLUSIONS

This case report illustrates the successful treatment of a radicular cyst in a 9-year-old female pediatric patient. The case focuses on the importance of a detailed history, clinical and radiographic evaluation, accurate presumptive diagnosis, suitable surgical options and possible sequelae of the lesion. Thus, complete enucleation of the cyst with extraction of the associated primary teeth and preservation of the successors was chosen as an appropriate treatment plan.

Conflict of Interest: None

INAPD

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