

Erupting Permanent Second Premolar after Marsupialization of Dentigerous Cyst: Case Report

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ABSTRACT

Introduction: Among all the developmental cysts associated with crowns of a permanent tooth, dentigerous cysts is most common. Though usually present in 2nd & 3rd decade of life, are rarely seen during childhood. The dentigerous cyst is always associated initially with the crown of an impacted, embedded or unerupted tooth. This type of cyst is potentially capable of becoming an aggressive lesion which leads to bone expansion resulting in facial asymmetry & displacement of teeth, severe root resorption of adjacent teeth and pain all possible sequelae brought about by continued enlargement of the cyst. If not treated can seldom lead to relatively serious potential complications like the development of ameloblastoma or epidermoid carcinoma. **Case Report:** In this case report we are describing the conservative management of 8-year-old child patient with painful carious mandibular primary second molar along with extra-oral hard swelling related to affected area. Clinical and radiographic examination suggesting of large radiolucent lesion associated with a crown of the mandibular right second premolar. The treatment instituted was the extraction of grossly carious deciduous tooth followed by marsupialisation and placement of an acrylic stent. The treatment allowed rapid healing of the lesion, which facilitates eruption of succedaneous tooth without loss of neurosensory function and also pathological fracture was eluded. Though smaller lesion can be enucleated, the larger lesions which involve a serious loss of bone with the possibility of jaw fracture needs conservative management. Therefore treatment of the dentigerous cyst is usually dictated by the size of the lesion.

KEYWORDS: Dentigerous cyst, Marsupialization, Acrylic stent

INTRODUCTION

Dentigerous or follicular cysts - most prevalent types of odontogenic cysts.¹ Associated with the crown of a developing or an unerupted tooth.² The cyst was encircling the crown of the unerupted tooth is also attached to the tooth along the cervical region. The teeth most oftenly involved are mandibular third molars, maxillary canines, and mandibular premolars.³ Shortly after complete formation of crown, sporadically a dentigerous cyst begin to develop through accumulation of fluid between remnants of enamel organ and the subadjacent tooth crown of a permanent tooth. The enlargement of dentigerous cysts is related to secondary-increase in cyst fluid osmolarity as a result of the passage of inflammatory cells and desquamated epithelial cells into the cyst lumen.⁴ In rare cases, the dentigerous cyst develops as a result of the intrafollicular spread of periapical inflammation from an overlying primary tooth.^{1,3}

Dentigerous cyst may result into possible complications which include:

- permanent bone deformation or pathologic bone fracture;
- bone expansion & destruction;
- loss of permanent teeth; and
- development of ameloblastoma squamous cell carcinoma and mucoepidermoid carcinoma⁵

The classic treatment proposed for dentigerous cyst include:

1. enucleation for small lesions and marsupialization for decompression of large lesions; or
2. a combination of both.^{6,7,8}

The idea of this report is to describe a case of a dentigerous cyst that impacted a second premolar, which erupted naturally after marsupialization of the cyst.

CASE REPORT

A 8-year-old boy (Fig.1 & Fig.2) was referred to The Department Of Pedodontics & Preventive Dentistry of SMBT Dental College And Hospital, Sangamner with the complaint of pain in the lower right back region of jaw since 3-4 days.

History of Presenting Illness: The patient was apparently

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asymptomatic 3-4 days back when he started experiencing pain in the lower right back region of jaw. Pain is continuous and aggravated on mastication. The patient gives a history of swelling since 2-3 days and patient gives a history of similar swelling 5-6 months back for which he was under medication.

His past medical and dental history was non-contributory.



Fig. 1- Front view



Fig. 2- Lateral view

Clinical examination revealed a retained mandibular right primary second molar that was mobile and gray in colour (discoloured), obliterated vestibule. Intra-oral examination revealed swelling, which produced bulging of the cortical bone of firm consistency. Extra-oral examination showed Diffuse swelling seen near angle of mandible on right side measures about 1.5cm in diameter, tender, temperature, slightly raised as compared to surrounding skin which is firm in consistency. Face appears slightly asymmetrical due to swelling on right side. Right submandibular lymph node palpable.

Provisional diagnosis: Acute exacerbation of chronic dentoalveolar abscess with 85

Investigations:

- Intra Oral Periapical Radiograph

- Orthopentogram
- Occlusal Radiograph
- Fine Needle Aspiration Cytology

Radiographic examination (Fig.3) revealed a unilocular, radiolucent area:

- extending to the lower mandible border from the mandibular right first bicuspid on the distal side to the permanent mandibular right first molar; and
- associated with the dental crown of the bud of the permanent mandibular right second premolar.

The radiolucent area showed clear limits and caused displacement of the latter.



Fig. 3- Pre-operative OPG revealed a unilocular, radiolucent area

IOPA examination (Fig.4) showed a large, circular, well-defined and a unilocular radiolucent area surrounding the crown of the mandibular right second premolar with the tooth displaced horizontally under the nonvital endodontically treated primary second molar.



Fig 4 – Pre-operative IOPA

An occlusal radiograph (Fig.5) revealed –buccal and lingual expansion of bone at the affected site.



Fig. 5 – Pre-operative Occlusal radiograph

FNAC:

It shows Red coloured serous fluid (Fig.6)



Fig.6 - Cystic fluid after aspiration

Cytopathologic examination suggestive of cystic lesion:

- Showed inflammatory cells
- Scanty cholesterol crystals.

Final diagnosis: Impacted permanent second premolar associated with dentigerous cyst.

Treatment: Marsupialization was chosen as treatment. An alginate impression of the mandibular arch was made prior to surgery. A space-maintaining appliance with a resin extension (surgical stent) was used, penetrating inside the cystic pouch to help decompress the lesion. The mandibular primary second molar was extracted under infiltration anaesthesia and an opening was made through the exposed cyst for a better view. The cystic wall next to the extracted teeth was removed for decompression of the lesion.

The cyst lining under the primary second molar could not be removed therefore histological examination was not performed.

Cytopathologic examination of an aspiration biopsy showed compatibility with a cystic lesion, and the differential diagnosis suggested a dentigerous cyst.

The appliance (Fig.7) was then immediately installed, adapting the resin projection to the orifice obtained by surgery.



Fig. 7 – Removable appliance with stent placed in cystic cavity

The extent of penetration was sufficient to: (Fig.8)

- prevent the formation of a fibrous scar; and
- permit decompression of the cystic pouch



Fig. 8 - Removable appliance with stent after placing in oral cavity

Since the first post-operative day, the mother was instructed to:

- irrigate inside the lesion with Betadine mouthwash after each meal; and
- clean the appliance.

Antibiotics were administered for 5 days to counteract postoperative infection. The removed surgical specimen was fixed in 10% formalin and stained with hematoxylin and eosin. Diagnostic hypothesis of a dentigerous cyst was confirmed with histopathological examination.

The patient was recalled once a week for:

- Regular clinical and radiographic examination; and
- confirmation of the wear of the resin projection based on the eruption of the mandibular right first premolar, which started after 4 months of follow-up.

Radiographic examination a month (Fig.9) after extraction revealed the circular radiolucent area had become smaller, but the second premolar was still impacted horizontally.



Fig. 9 - Radiographic examination after 1 month

About 4 months postoperatively (Fig.10), the affected radiolucent area had disappeared and repair by new bone tissue was observed.



Fig.10 - Radiographic examination after 4 months

After 6 months (Fig.11), the affected second premolar had erupted partially.



Fig. 11 - Radiographic examination after 6 months

Complete eruption of second premolar was seen at 12 months (Fig.12)



Fig. 12 - Radiographic examination after 12 months

DISCUSSION

Although documentation in the literature suggests that dentigerous cysts occur more commonly during the second decade of life^{9,10}, these lesions can also be found in children and adolescents. The incidence of dentigerous cysts is twice as high in male patients.^[10,11] Although these cysts may occur anywhere in the oral cavity, Ustuner et al¹² emphasized the posterior mandible as the most frequently affected region. Marsupialization or decompression is a method that endeavours to relieve intracystic pressure through the creation of an accessory cavity.¹³ This technique was selected as it is a more conservative intervention for the treatment of large cysts, considering the frequent proximity of these lesions to the bud of developing permanent teeth, especially in pediatric dentistry, as seen here in this patient.

A removable space-maintaining appliance with a resin projection was used after marsupialization, which permitted decompression and prevented the entry of food into the cystic pouch. The procedure was carried out successfully been applied by Delbem et al⁶ for the treatment of radicular cysts in children. This technique averted the formation of fibrous scars, which can impair eruption of the permanent tooth. Parent cooperation was most important for treatment success. The association between an infected primary tooth and the development of a dentigerous cyst involving the pre-erupted permanent tooth has long been discussed.

Azaz and Shteyer¹⁴ proposed that persistent and prolonged inflammation caused chronic irritation to the unerupted premolar's dental sac causing dentigerous cyst.

Furthermore, Shaw et al¹⁵ discussed that inflammation at the apex of a primary tooth may lead to the development of an inflammatory follicular cyst in a series of 13 cases. On the other hand, Shear doubted the association of dentigerous cyst formation with the inflammation around deciduous teeth and presented an apparent relationship wherein the erupting permanent tooth had indented the radicular cyst wall of primary tooth.

Main¹⁶ categorized the epithelial jaw cysts into two groups developmental and inflammatory and added the inflammatory follicular cyst to the latter group as a new type. Seddon et al.^[17] exhibited an epithelial proliferation of the follicular tissues induced by chronic periapical inflammation of the deciduous as the most probable pathogenesis of cystic transformation. The authors approved the term "inflammatory dentigerous cyst" for the dentigerous cyst caused or hastened by periapical inflammation of the primary tooth. Marsupialization is the best method to conserve a tooth affected by a dentigerous cyst and to allow its eruption, especially in a pediatric patients.

Azaz and Shteyer¹⁴, described marsupialization in four cases of dentigerous cysts involving second premolars that apparently were associated with infected primary predecessors. Four weeks postoperatively, the teeth had erupted. Furthermore, Shaw et al^[15] reported similar findings in nine cases. In this case, the second premolar, which was infected with dentigerous cyst showed a marked displacement and was hopelessly impacted. However, marsupialisation was performed post extraction of the infected primary second molar which allowed eruption of the permanent premolar without orthodontic treatment.

In any case of inflammatory dentigerous cyst related with an infected primary tooth, marsupialization considered to be the first choice of treatment to permit eruption of the succedaneous tooth. It is important to note that the use of the marsupialization technique for treating cysts involving developing buds requires follow-up of the case until the permanent teeth erupt.

CONCLUSION

Advantages of a space-maintaining appliance with a resin extension (surgical stent) are-

- More conservative method for the treatment of large cysts,
- Prevent formation of fibrous scar
- Act as a space maintainer
- Prevents entry of food into cystic pouch

REFERENCES

1. Main DM: Epithelial jaw cysts: a clinicopathological reappraisal. *Brit J Oral Surg* 8:114-25,1970.
2. Soames JV, Southam JC: Cysts of the jaws and oral soft tissues. In: *Oral Pathology*, 2nd Ed. Soames JV, Southam JC, Eds. Oxford: Oxford University Press, 1993, pp 69-87.
3. Shear M: Dentigerous (follicular) cyst. In: *Cysts of the Oral Regions*, 3rd Ed. Shear M, Ed. Bristol: Wright PSG, 1992, pp 75-98.
4. Browne RN, Smith AJ: Pathogenesis of odontogenic cyst. In: *Investigative Pathology of the Odontogenic Cysts*. Browne RN, Ed. CRC Press, 1990, pp 88-109.
5. Chakraborty A, Sarkar S, Dutta BB. Localized disturbances associated with primary teeth eruption. *J Indian Soc Pedod Prev Dent* 1994;12: 25-28.

6. Delbem AC, Cunha RF, Vieira AE, Pugliesi DM. Conservative treatment of radicular cyst in a 5-year-old child: A case report. *Int J Paediatr Dent* 2003;13:447-450.
7. Perez DM, Molare MV. Conservative treatment of dentigerous cysts in children. A report of 4 cases. *J Indian Soc Pedod Prev Dent* 1996;14:49-51.
8. Fortin T, Coudert JL, Francois B, Huet A, Niogret F, Jourlin M, et. al. Marsupialization of dentigerous cyst associated with foreign body using 3D CT images: A case report. *J Clin Pediatr Dent* 1997;22:29-33.
9. Arotiba JT, Lawoyin JO, Obiechina AE. Pattern of occurrence of odontogenic cysts in Nigerians. *East Afr Med J* 1998;75:664-666.
10. Ziccardi VB, Eggleston TI, Schneider RE. Using fenestration technique to treat a large dentigerous cyst. *J Am Dent Assoc* 1997;128:201-205.
11. Benn A, Altini M. Dentigerous cysts of inflammatory origin. A clinicopathologic study. *Oral Surg Oral Med Oral Pathol Oral Radial Endod* 1996;81:203-209.
12. Ustuner E, Fitoz S, Atasoy C, Erden I, Akyar S. Bilateral maxillary dentigerous cysts: A case report. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2003;95:632-635.
13. Bodner L, Woldenberg Y, Bar-Ziv J. Radiographic features of large cysts lesions of the jaws in children. *Pediatr Radiol* 2003;33:3-6.
14. Azaz B, Shteyer A: Dentigerous cysts associated with second mandibular bicuspid in children: report of five cases. *J Dent Child* 40:29-31,1973.
15. Shaw W, Smith M, Hill F: Inflammatory follicular cysts. *ASDC J Dent Child* 47:97-101,1980.
16. Main DM: Epithelial jaw cysts: 10 years of the WHO classification. *J Oral Pathol* 14:17,1985
17. Seddon RP, Fung DE, Barnard KM, Smith PB: Dentigerous cysts involving permanent incisors: four case reports. *Int J Paediat Dent* 2:105-11,1992.

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