

Management of dentigerous cyst in a young child: A case report

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Abstract: A dentigerous cyst or follicular cyst is an odontogenic cyst - thought to be of developmental origin - associated with the crown of an unerupted tooth. Such cyst remain initially asymptomatic unless infected. The purpose of this case report is to describe the diagnosis and management of dentigerous cyst in a 7.5 year-old boy. The chosen treatment was marsupialization which responded well with eruption of affected teeth to their normal occlusal relationship within 1 year.

Keywords: Dentigerous cyst, Enucleation, Marsupialization, Unerupted.

INTRODUCTION

A dentigerous cyst is a radiolucent, well-defined, odontogenic lesion that surrounds the crown of an unerupted tooth and prevents its eruption.¹⁻³ It is caused by an alteration of the reduced enamel epithelium (after completion of amelogenesis), which results in fluid accumulation between the epithelium and the tooth crown.⁴⁻⁶ The two principal methods of treating a dentigerous cyst are enucleation and marsupialization. Marsupialization has the advantage of promoting the eruption of a dentigerous cyst-associated tooth.⁷⁻¹¹ An impacted tooth associated with a dentigerous cyst, however, does not always successfully erupt following marsupialization. Enucleation and tooth extraction can lead to functional, cosmetic, and psychological consequences for the patient. Here is a case of dentigerous cyst in a young child managed by marsupialisation with good occlusal relationship attained within 1year post- operatively.

CASE REPORT

A seven and half year old male child reported to the Unit of Pedodontics and Preventive Dentistry with his mother, complaint being a painless swelling in left side of lower jaw for past 1month which was gradually increasing in size. No history of pain or discharge related to swelling. On general examination, the patient was healthy, and there was no history of past illness or hospitalization or trauma to the jaw. On extra-oral examination, a single diffuse swelling was noted on left side of face with no sinus or active discharge of pus. On intra-oral examination, a hard swelling in relation to grossly decayed 74, 75 was found with obliteration of buccal vestibule. (Fig: 1) The swelling was bony hard with expansion of buccal cortex.

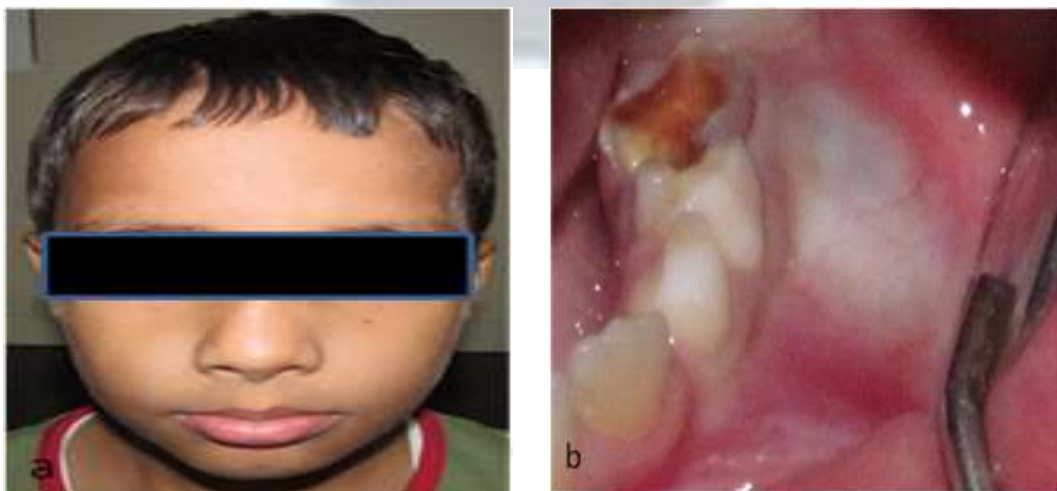


Fig. 1: Pre-op photographs, a. Extra-oral view, b. Intra-oral view showing obliterated buccal sulcus with respect to grossly carious 74,75

Orthopantomograph (OPG) revealed an oval-shaped unilocular radiolucency extending from 34 to 36 with 35 displaced towards the inferior border of mandible. (Fig:2) Based on clinical and radio graphical examination, a provisional diagnosis of dentigerous cyst was made.



Fig. 2: Pre-op OPG showing well defined radiolucency extending from 34 to 36, displacing 35 towards the inferior border of left side body of the mandible.

The contents of the swelling were aspirated and sent for investigation. (Fig: 3) Other routine investigations were within normal limits.



Fig 3: Cystic fluid aspiration

Considering the age of the patient and size of the lesion marsupialisation was planned. Before scheduling the child for surgical procedure acrylic stent was fabricated to maintain the patency of the cystic cavity. After an inferior alveolar nerve block and buccal nerve block with 2cc lignocaine HCL with 0.020 mg epinephrine, the primary mandibular left first and second molars were extracted. (Fig: 4a) Cystic cavity was decompressed through the extraction socket and it was maintained patent using acrylic stent which was fabricated prior to surgical procedure. (Fig: 4b) A biopsy specimen of cyst lining was taken and sent for histopathologic examination. The patient was recalled for irrigation with saline solution every week for 1 month, then twice a month for 3 months, and once a month for 4 months.

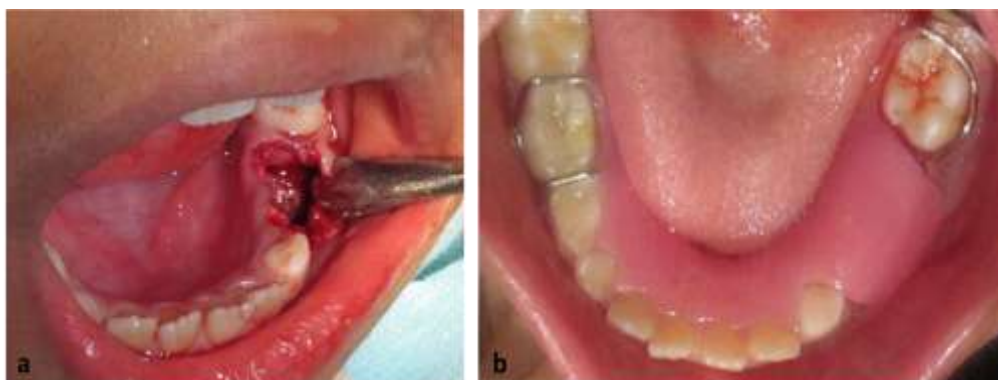


Figure 4- Intra-op a. Extraction of 74,75. followed by decompression of cyst through extraction socket, b. acrylic stent in position

The follow up visits were uneventful. (Fig: 5) The unerupted teeth were examined via panoramic radiographs for the assessment of the eruption level. (Fig: 6) It was observed that the affected teeth erupted into their proper position and occlusion within 1 year after marsupialization. (Fig: 7, 8)



Figure 5-Follow up after 2 weeks



Figure 6- follow up OPG (6months)



Figure 7- follow up photographs after 1.5 years; a. right lateral view, b. frontal view, c. left lateral view, d. maxillary occlusal view, d. mandibular occlusal view showing erupted 34,35



Figure 8- follow up OPG (2years) showing completely erupted 34,35 and good bone healing after marsupialization

DISCUSSION

There are 2 types of dentigerous cysts.⁴ The first is developmental in origin and occurs in mature teeth, usually as a result of impaction. These cysts usually occur in the late second and third decades and predominantly involve mandibular third molars.⁴ The second type is inflammatory and occurs in immature teeth as a result of inflammation from a nonvital primary tooth or other source, subsequently spreading to the tooth follicle. These are often diagnosed in the first and early part of the second decade of life, and predominantly involve mandibular premolars.¹² The case presented might be classified as inflammatory, due to the lesions related with the carious primary mandibular left second molar and the patient's age. The idea of an inflammatory origin for dentigerous cysts was first offered by Bloch-Jorgensen,¹³ who suggested that all follicular cysts in his series originated from the overlying necrotic primary tooth.

Shaw et al.¹⁴ reported on 13 further cases of follicular cysts involving premolars that were apparently associated with infected primary teeth. Dentigerous cysts are frequently discovered when radiographs are taken to investigate failure of tooth eruption, a missing tooth, or misalignment. There is usually no pain or discomfort associated with the cyst unless it becomes secondarily infected. It progresses slowly and may exist for several years without being noticed. It may cause displacement of adjacent teeth and resorption of roots. Dentigerous cysts appear as unilocular lucent cysts of varying sizes, with well defined sclerotic borders, associated with the crown of an unerupted tooth.⁷ If a follicular space is more than 5 mm in a radiograph, an odontogenic cyst may be suspected.¹⁵

Marsupialization or total enucleation may be considered as treatment options for a dentigerous cyst. Enucleation is the process in which the cyst is completely removed without rupturing; this is generally indicated for small cysts. For large lesions, this procedure can cause fracture of the mandible, tooth revitalization, or removal of impacted teeth associated with the lesions that do not need to be removed. Enucleation is indicated when there is no likelihood of damaging anatomic structures such as apices of vital teeth, maxillary sinus, or the inferior alveolar nerve. Marsupialization consists of a surgical cavity on the wall of the cyst, emptying its content, and maintaining continuity between the cyst and the oral cavity, maxillary sinus, or nasal cavity.¹⁶ This technique is indicated for large cysts or unerupted teeth associated with cysts in pediatric patients or in patients with systemic diseases, including the elderly.¹⁷ Conservative approaches have better prognosis in young patients because, in addition to the greater bone regeneration capacity of children, immature teeth have an optimal eruption potential.

CONCLUSION

In children, marsupialization should be the first choice of treatment because it provides an opportunity for tooth eruption. Additionally, the treatment plan must be multidisciplinary. After the marsupialization, eruption of the permanent teeth must be followed closely, both clinically and radiographically, and must involve the expertise of an oral and maxillofacial specialist as well as a pediatric dentist. When the permanent teeth do not erupt spontaneously, it is advisable to consult with an orthodontist.

REFERENCES

- [1]. Lucas RB. Dentigerous Cyst. In: Lucas RB, ed. Pathology of Tumors of the Oral Tissues. 4th ed. Edinburgh: Churchill Livingstone; 1984:366-9.
- [2]. Neville BW, Damm DD, Allen CM, Bouquot JE. Odontogenic cysts and tumors. In: Neville BW, Damm DD, Allen CM, Bouquot JE, eds. Oral and Maxillofacial Pathology. 2nd ed. Philadelphia: WB Saunders; 2002:589-642.
- [3]. Gulbranson SH, Wolfrey JD, Raines JM, McNally BP. Squamous cell carcinoma arising in a dentigerous cyst in a 16-month-old girl. Otolaryngol Head Neck Surg 2002;127:463-4.
- [4]. Benn A, Altini M. Dentigerous cysts of inflammatory origin. A clinicopathologic study. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1996; 81:203-9.
- [5]. Shear M. Dentigerous Cyst. In: Shear M, ed. Cysts of the Oral Region. 3rd ed. Oxford: Wright; 1992: 75-98.
- [6]. Brook AH, Winter GB. Developmental arrest of permanent tooth germs following pulpal infection of deciduous teeth. Br Dent J 1975;139:9-11.
- [7]. Takagi S, Koyama S. Guided eruption of an impacted second premolar associated with a dentigerous cyst in the maxillary sinus of a 6-year-old child. J Oral Maxillofac Surg 1998;56:237-9.
- [8]. Thoma KH. Oral Surgery II. 5th ed. St. Louis: Mosby Co; 1969:891-904.
- [9]. Ziccardi VB, Eggleston TI, Schneider RE. Using fenestration technique to treat a large dentigerous cyst. J Am Dent Assoc 1997;128:201-5.
- [10]. Miyawaki S, Hyomoto M, Tsubouchi J, Kirita T, Sugimura M. Eruption speed and rate of angulation change of a cyst-associated second premolar after marsupialization of a dentigerous cyst. Am J Orthod Dentofacial Orthop 1999;116:578-84.
- [11]. Fujii R, Kawakami M, Hyomoto M, Ishida J, Kirita T. Panoramic findings for predicting eruption of mandibular premolars associated with dentigerous cyst after marsupialization. J Oral Maxillofac Surg 2008;66:272-6.
- [12]. Mintz S, Allard M, Nour R. Extraoral removal of mandibular odontogenic dentigerous cysts: A report of 2 cases. J Oral Maxillofac Surg 2001;59:1094-6.
- [13]. Bloch-Jorgensen K. Follicular cysts. Dent Cosmos 1928;70:708-11.
- [14]. Shaw W, Smith M, Hill F. Inflammatory follicular cyst. J Dent Child 1980;47:97-101.
- [15]. Ko KS, Dover DG, Jordan RC. Bilateral dentigerous cysts: Report of an unusual case and review of the literature. J Can Dent Assoc 1999;65:49-51.
- [16]. Ellis E. Surgical Management of Oral Pathologic Lesions. In: Peterson LJ, Ellis E, Hupp JR, Tucker MR, eds. Contemporary Oral and Maxillofacial Surgery. 4th ed. St Louis: Mosby; 2002:479-502.
- [17]. Nishide N, Hitomi G, Miyoshi N. Irrigational therapy of a dentigerous cyst in a geriatric patient: A case report. Spec Care Dentist 2003;23:70-2.