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Conservative management of a misdiagnosed infected dentigerous cyst in transition dentition

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Abstract

Dentigerous cysts are odontogenic cysts associated mostly with the crowns of unerupted permanent teeth. This article reports the case of a 10-year-old child who presented with a swelling associated with a carious deciduous tooth. Radiographically, the cystic lesion involved its permanent successor. The presumed radicular cyst was marsupialised, histopathologic evaluation uncurtained the dilemma and diagnosis of an infected dentigerous cyst was established. In the follow-up appointments, impacted 35 was seen positioning itself spontaneously towards eruption.

Keywords: Radicular cyst, Dentigerous cyst, Deciduous tooth.

1. Introduction

Odontogenic cysts are frequently seen in dental practice and constitute an important group of oral and maxillofacial pathology. Dentigerous cysts (DC) are the second most common odontogenic cysts after radicular cysts accounting for approximately 24% of all true cysts in the jaws Selvamani M & Mourshed F *et al.* [1,2]. However, the frequency of odontogenic cysts in children is relatively low Deboni MCZ *et al.* [3]. Developmental and inflammatory odontogenic cysts are epithelial in origin, exhibiting slow growth and a tendency toward expansion. However, despite their benign biological behavior, these lesions can reach a marked size if they are not diagnosed and treated appropriately Santos BZ *et al.* [4].

As defined by WHO, DC is "A cyst which encloses the crown and is attached to the neck of an unerupted tooth" Kramer IR *et al.* [5]. Radiographically, it typically appears as a well-circumscribed, unilocular, usually symmetric radiolucency around the crown of an impacted tooth. The size of the radiolucency must be larger than that of a normal dental follicle Daley TD *et al.* [6]. Histologically, it consists of a fibrous wall that may contain varying amounts of myxoid tissue and variable numbers of odontogenic rests. The cyst is lined by nonkeratinized stratified squamous epithelium, which may exhibit occasional mucous cells, ciliated cells, and, rarely, sebaceous cells Shafer WG & Regezi JA *et al.* [7,8].

Often periapical radiolucency relating to primary teeth tends to be misdiagnosed as a periapical granuloma of the primary teeth, or a DC from the permanent successors Takiguchi M *et al.* [9]. It is not unusual for a DC to mimic a radicular cyst, especially when associated with a carious primary tooth as well as its unerupted permanent successor. This case reports the management of a case of a misdiagnosed dentigerous cyst in mixed dentition.

2. Case Report

A 10 year healthy old male child was reported to the department of Paedodontics and Preventive Dentistry, Buddha institute of dental sciences & Hospital, Patna having a chief complaint of hard swelling in the lower left back region of the jaw over past one year which occurred infrequently and subsided on taking medication (Fig. 1a). The lesion was asymptomatic and the past medical history of the boy was non-contributory.

Intraoral examination revealed a firm swelling in relation to the alveolar process of the mandible extending from tooth 75 to 36 (Fig. 1b). The panoramic radiographic exam revealed a well-defined radiolucent lesion in the alveolar process of the left mandible measuring approximately 3.5 cm × 4 cm in size. Tooth 75 was associated with the lining of the cyst and the un-erupted 35 was displaced to the lower border of the mandible (Fig. 1c).



Fig 1: (a) hard swelling in the lower left back region of the jaw; (b) firm swelling in relation to the alveolar process of the mandible extending from tooth 75 to 36; (c) a well-defined radiolucent lesion in the alveolar process of the left mandible measuring approximately 3.5 cm × 4 cm in size. Tooth 75 associated with the lining of the cyst and the un-erupted 35 displaced to the lower border of the mandible.



Fig 2: (a) Post Extraction of 74 and 75 followed by curettage and irrigation of the cystic lesion; (b) Histological image revealing the presence of profuse inflammatory cells, extravasated RBCs, and few islands of odontogenic epithelium suggestive of Infected DC.

Under the diagnostic hypothesis of Radicular cyst, marsupialisation of the cyst was chosen as the treatment of choice. Written consent form was obtained prior to surgery. The surgery was performed under local anaesthesia and under antibiotic coverage. Extraction of tooth 74 and 75 was carried out followed by curettage and irrigation of the cystic lesion

(Fig.2a). An Iodoform gauze pack was placed inside the extraction socket to isolate the cystic cavity. The marsupialised tissue was sent for histopathological examination.

Histopathological examination revealed the presence of slightly columnar and palisading basal cells. The superficial cells were vacuolated. The surrounding fibrous capsule showed profuse inflammatory cells, extravasated RBCs, and few islands of odontogenic epithelium suggestive of Infected DC (Fig. 2b).

Clinical as well as panoramic radiographic examination was performed every time when the patient was recalled. At three month, the intraoral swelling had subsided (Fig. 3a), panoramic imaging revealed considerable radio-opacity in the cystic space as well as base of the mandible suggestive of bone formation (Fig. 3b), six monthly review revealed more significant bone formation and process of spontaneous eruption of tooth 35 on the pantomograph (Fig. 3c).

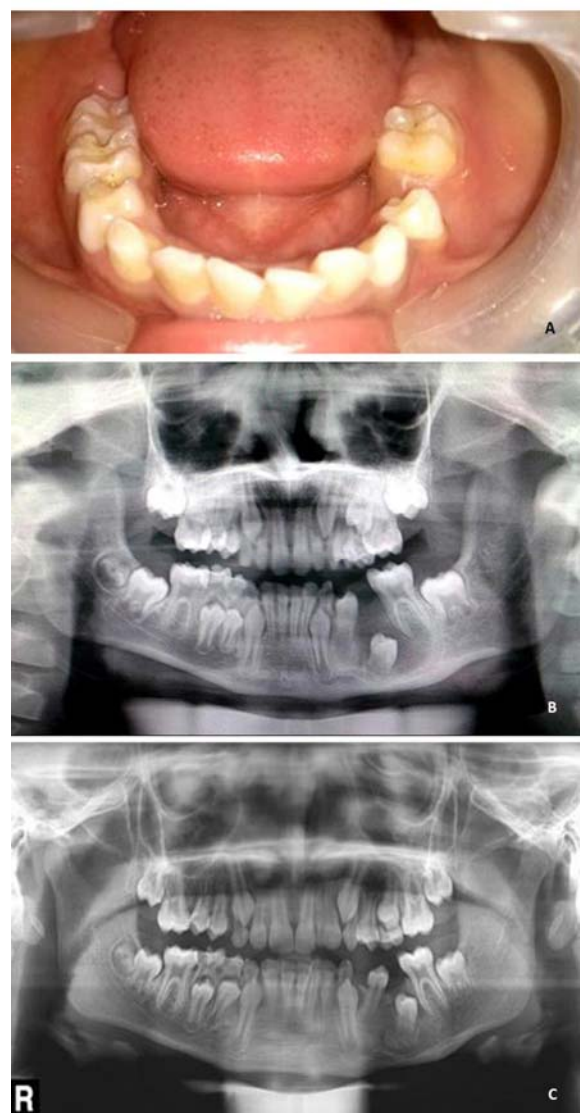


Fig 3: (a) No intraoral swelling in three months follow up; (b) pantomograph revealing considerable bony formation; (c) more significant bone formation and process of spontaneous eruption of tooth 35 on the pantomograph in six month follow up.

3. Discussion

Although most DC are considered to be of developmental origin, some examples seem to have an inflammatory

pathogenesis, but it is very difficult to determine histopathologically whether the inflammatory component is primary or secondary in nature Neville *et al.* [10].

DC develops around the crown of an unerupted tooth by expansion of its follicle, when fluid or a space occurs between the reduced enamel epithelium and the enamel of an impacted tooth commonly mandibular third molars, followed by maxillary canines and then maxillary third molars. It has even been reported, albeit rarely, in association with impacted deciduous teeth Boyczuk MP *et al.* [11]. These cysts usually present in the second or third decades of life and are rarely seen during childhood Akay MC *et al.* [12]. Most DC are solitary. Multiple/bilateral cysts are usually found in association with a number of syndromes including cleidocranial dysplasia, Maroteaux--Lamy syndrome and Gorlin--Goltz syndrome Saluja JS *et al.* [13].

Unlike numerous studies on oral maxillofacial cystic lesions in adults, there are only few retrospective studies in children. Regarding the few literature on the outcomes of DC in children treated with different surgical approaches, two basic surgical procedures marsupialization and enucleation have been described Koca H *et al.* [14].

Methods employed for elimination of DC have included decompression, marsupialisation, and enucleation. However, the criteria for selecting these treatment modalities (indications and contraindications) are not clearly defined Motamedi MH *et al.* [15]. Surgery is usually recommended for a DC, and consists of enucleation and extraction of the teeth embedded in it or affected by it. In very large cysts, an initial phase of marsupialization of the lesion to the oral cavity followed by the usual surgical treatment is also recommended Martínez-Pérez D *et al.* [16].

Enucleation is indicated when there is no likelihood of damaging anatomical structures. On the other hand marsupialisation can maintain impacted tooth in its cavity, promote its eruption and also minimize the risk of damage to important anatomical structures Bodner L & Hyomoto M *et al.* [17, 18]. Especially for young patients, the treatment modality should be as conservative as possible in order to decrease possible problems to the adjacent developing structures. Marsupialization has the advantage of reducing the cyst cavity and is effective in preserving the involved teeth. Therefore, it is recommended as an appropriate technique during the age when the eruptive power of teeth is strong and the capacity of bone repair process is high Bodner L & Agulio L *et al.* [17, 19]. After marsupialization, iodoform gauze packing or an obturator should be inserted into the cystic lesion opening. This prevents spontaneous closure, aids in the prevention of food accumulation into the cystic cavity and avoids damage to the permanent teeth Hu YH *et al.* [20].

In the present case, the diseased primary molar was extracted to gain a conservative approach of the cystic site and marsupialisation was chosen as the modality of choice since the preservation of the permanent successor was desirable. Later iodoform gauze pack was placed into the cystic lesion opening for the above said reasons. In the follow-up appointments, impacted 35 was seen positioning itself spontaneously towards eruption and new bony regeneration was found in the pantomograph. Regular follow-up is still necessary to evaluate the need for any orthodontic intervention.

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