

Dentigerous Cyst: A Case Report and Review

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ABSTRACT

Background: Dentigerous cysts are the second most common odontogenic cystic lesions of developmental origin associated with the unerupted teeth. Mandibular third molars are most commonly involved teeth. Approximately 24% of all cysts of jaws are dentigerous cysts with male predilection and commonly occur in the 10-30 years age group. The preferable treatment for dentigerous cyst is enucleation and marsupialization, which has the advantage of preservation of continuity of bone which further maintains aesthetics. Here we report a case of dentigerous cyst involving right impacted mandibular third molar in a 17-year-old male patient.

Keywords: Dentigerous cyst, follicular cyst, serous cyst, osseous cyst, unerupted teeth, enucleation, marsupialization.

INTRODUCTION

Dentigerous cyst is defined as cystic lesion involving the crown of impacted teeth caused by a fluid accumulation between the follicular epithelium and the crown of the tooth [1]. The second most common odontogenic cyst, next to radicular cyst is a dentigerous cyst. Third molars, canines, and the second premolars are the most involved teeth in descending order of occurrence. The dentigerous cyst can be suspected when the follicular space is more than 5 mm, while 3-4 mm is the normal follicular space [2]. Erupting tooth exerts pressure on an impacted follicle which obstructs the venous outflow. This causes rapid transudation of serum across the capillary walls, which increases the hydrostatic pressure of the pooling fluid, leading to separation of the follicle from the crown with or without reduced enamel epithelium. The dentigerous cyst was first reported in 1847 and was known as an osseous cyst, distended capsule or serous cyst. Approximately 24% of all true cysts of jaws are dentigerous cysts. In maximum cases, it can be detected incidentally during a routine

radiograph examination. Dentigerous cyst is not usually associated with pain or discomfort unless it is secondarily infected. Radiographic features include unilocular radiolucent lesion characterized by well-defined sclerotic margins and associated with the crown of an un-erupted tooth [3]. When the cyst enlarges in size, it causes cortical expansion and clinically manifested as swelling, and pain [4].

CASE REPORT

A 17-year-old male patient was referred to the department of oral and maxillofacial surgery with a chief complaint of swelling and pain on the right lower back tooth region of the jaw for three months. On extraoral examination, gross facial asymmetry was seen on the right lower posterior region of the mandible extending from angle of the mouth to ear lobule. A Single diffuse swelling of size 4x5 cm extending anteriorly - 1cm away from the corner of the mouth, posteriorly - 2cm below the ear, superiorly - ala-tragus line, inferiorly - inferior

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border of mandible (Fig. 1). On palpation swelling was firm inconsistency.

Intraoral examination revealed mouth opening of 30mm, and the bloody tinged fluid discharge was seen from right lower 3rd molar region. Buccal vestibule obliteration was seen on the right side extending from lower 2nd premolar to 3rd molar (Fig. 2). Opg revealed a unilocular radiolucent lesion associated with impacted 48 measuring approximately 4x5 cm extending into the ramus, angle of the mandible, involving the coronoid process of the mandible on the right side, resorption of the mandibular distal root is also seen in relation to 47 teeth involving the inferior alveolar nerve. The lower border of the mandible is intact (Fig. 3). Cbct revealed buccal cortical plate perforation and the lingual cortical plate is intact in relation to the lesion (Fig. 4).

Under empirical antibiotic therapy, blood-tinged fluid was obtained when aspiration biopsy was done preoperatively. Incisional biopsy was done. Microscopic examination revealed thin, fragile odontogenic epithelial lining with 2-3 layers of epithelium strata including basal cells and the underlying connective tissue is loose without any evidence of chronic inflammatory infiltrate and with evidence of odontogenic epithelial islands, suggestive of dentigerous cyst and features suggestive of the dentigerous cyst (Fig 5).

Under general anaesthesia, marsupialization was done followed by enucleation and the associated unerupted third molars and mandibular second molar were removed along with cystic lining and peripheral ostectomy was done followed by packing (Fig. 6, 7). The excised specimen was sent for histopathological evaluation which confirmed the final diagnosis of a dentigerous cyst. The patient was followed up for one year with no evidence of recurrence (Fig. 8).

DISCUSSION

About 70% of dentigerous cysts occur in the mandible and 30% in the maxilla. Teeth most commonly associated with dentigerous cyst are mandibular third molars, maxillary canines, mandibular premolars, and, very rarely, maxillary third molars. There are three variants of dentigerous cyst: (a) Central: the crown is

enveloped by the follicle symmetrically, (b) Lateral: dilatation of follicle on one aspect of the crown, and (c) circumferential: The follicle expands in a manner which envelopes the entire tooth [3].



Fig 1: Extraoral swelling on right side of the cheek.



Fig 2: Intraoral right buccal vestibule obliteration.



Fig 3: Panoramic radiograph showing radiolucent lesion surrounded by a radiopaque border in relation to impacted 3rd molar extending to right ramus and coronoid.



Fig 4: CBCT showing buccal plate perforation.

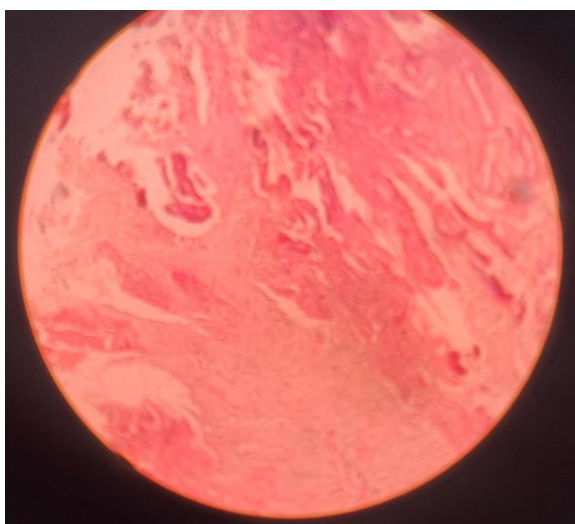


Fig 5: HPE features suggestive of Dentigerous cyst.



Fig 6: Cystic cavity.



Fig 7: Excised cystic lesion with impacted teeth.



Fig 8: Post-operative panoramic radiograph.

In 1963 the terminology: keratinizing and calcifying odontogenic cysts were introduced by Gold. The dentigerous cyst has been defined as one “which is attached at the cement-enamel junction and encloses the crown of an unerupted tooth”. Dentigerous cyst is also known as “follicular cyst”. As dentigerous cysts have been thought to arise from reduced enamel epithelium, there is a possibility that a dentigerous cyst is a primordial variant; arising from more primitive cells of the developing enamel organ. Most of the times, in maximum cases, it can be detected incidentally during a routine radiograph examination [4].

The normal follicular space is approximately 3–4 mm, whereas a dentigerous cyst can be suspected when space is more than 5 mm [5]. An intrafollicular spread of periapical inflammation from a deciduous tooth also may result in the development of a dentigerous cyst. These cysts can be referred to as inflammatory dentigerous cysts [6]. The dentigerous cyst may cause displacement of

adjacent teeth and resorption of teeth roots [7]. Other odontogenic cysts like radicular cysts, odontogenic keratocysts, and odontogenic tumours such as ameloblastoma, pindborg's tumor, odontoma, odontogenic fibroma may share the same radiologic features as dentigerous cysts. Microscopic evaluation is necessary most of the time to define the type of lesion. In extensive cases, radiographs alone may not be sufficient to show the full extent of the lesions, and advanced imaging like CT scans may be needed. Dentigerous cysts are usually single lesions. Bilateral and multiple cysts have been reported in basal cell nevus syndrome, mucopolysaccharidosis, cleidocranial dysplasia and after prolonged concurrent use of cyclosporine A and calcium channel blockers [8].

Therapy for a cyst is determined by its aetiology and localization, which, on the one hand, means that the causal tooth must be treated or removed, and on the other that the cystic lining, which secretes the cystic content, must be excised. Among various surgical treatment modalities to treat a dentigerous cyst, enucleation of the cyst is the most widely accepted procedure. Enucleation will certainly prevent the aggressive radical treatment protocol, which would be taxing both to the patient as well as a surgical team. Therefore, in such cases, conservative treatment does have a far better advantage to minimize postoperative morbidity. This method of treatment will stand a chance of a radical option if the need arises in the course of patient follow-up [9].

Treatment for a dentigerous cyst obliterating the maxillary sinus and associated with an ectopic third molar can be done with enucleation of the cyst and extraction of the associated tooth through Caldwell-Luc surgical procedure [10]

Marsupialization and orthodontic traction are considered to be the best option for patients with a dentigerous cyst that includes an unerupted tooth. Orthodontic traction of the unerupted tooth is often performed after marsupialization if there is adequate space for the unerupted tooth [11]

Marsupialization and decompression are conservative techniques that attempt to relieve intracystic pressure by creating an accessory cavity [12]. Marsupialization of odontogenic cystic lesions was described by Partsch in 1892; it is a technique

where a large window is made in cystic wall and then sutured to the oral mucosa. Decompression, proposed by Thoma, can be performed by using devices such as a tube or stent, it's based on creating a window between the cyst and the oral cavity by fixing the device. The largest disadvantage of conservative treatment is the preservation of pathological tissue inside the jaws without histological examination [13].

The most common neoplasms that originate in the lining of cysts are benign odontogenic tumours. Non-odontogenic tumours that arise in conjunction with odontogenic cysts are usually malignant: epidermoid carcinoma and mucoepidermoid carcinoma [14].

Dentigerous cysts accounted for approximately 16.6% of odontogenic cysts associated with pathologic fractures. In most cases, open reduction and internal fixation were carried out after cyst enucleation or marsupialization. When a significant amount of bone was lost, resection of the involved bone was performed to re-construct and fix the area [15]. The ideal reconstruction would provide a solid arch to articulate with the upper jaw, restoring swallowing speech, mastication, and esthetics. Autogenous vascularized bone grafts, in combination with microsurgical techniques, have revolutionized mandibular reconstruction [16].

CONCLUSION

Dentigerous cyst is the second most common cyst among odontogenic cysts. Treatment varies depending on the age of the patient, location of the cyst, size of the cyst, the involvement of any vital structures. Most of them are treated with enucleation and removal of associated teeth. Large cysts are treated by marsupialization followed by enucleation. Marsupialization has the advantage of relieving intracystic pressure, thereby leading to shrinkage of cystic lesion further enabling the surgeon to an enucleate cyst at a later date without damaging vital structures and also preventing pathologic fracture of the bone. Enucleation of cyst should be performed with care to remove the cyst in one piece without fragmentation, which reduces the chances of recurrence of the cyst. Remnants of cystic lining lead to the development of ameloblastoma or squamous cell carcinoma either from lining epithelium or from odontogenic islands

in the connective tissue wall or mucoepidermoid carcinoma from mucus-secreting cells in the lining.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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