

ACCIDENTAL FINDING OF DENTIGEROUS CYST IN RELATION TO MAXILLARY IMPACTED CANINE- A CASE REPORT

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ABSTRACT

Most common developmental odontogenic cysts are dentigerous cysts. They are usually derived from the epithelial remnants of tooth forming organs. Dentigerous cysts gradually increase in size. There may also be associated with bone resorption. Developmental odontogenic cysts account for 25% of all odontogenic cysts of the jaw. They are commonly associated with impacted or embedded teeth like mandibular/maxillary third molar and maxillary canines. It is always better to manage dentigerous cyst conservatively and thereby maintaining the vitality of adjacent structures.

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INTRODUCTION

Jaws anchor a wide variety of cysts and neoplasms, due in large part to the tissues involved in tooth formation (1). Odontogenic cysts represent the most common form of cystic lesions affecting the maxillofacial region. Dentigerous cyst (DC) constitutes the most common developmental odontogenic cyst and accounts for approximately 25% of all odontogenic cysts of the jaws. Their frequency estimated in general population has been at 1.44 for every 100 unerupted teeth (2). Usually, no symptoms are found to be associated with DCs or unless there is an infection, in which case it is followed by a painful swelling. A late, non-eruption of tooth could suggest the possibility of an underlying cyst. A dentigerous cyst can expand causing facial asymmetry, bony expansion, tooth malpositioning, and sensitivity (3).

As with other cysts, DC can cause cortical plate expansion, involvement of teeth and subsequent destruction of the tissues as it expands (4).

Third molars, canines, and second premolars are the teeth that are most commonly involved (4-5). Radiographically, DCs show typically unilocular radiolucency with a well defined sclerotic border (6-7). Histopathologic observations have shown that the lining of DC has the potential to develop into an aggressive ameloblastoma; therefore, early detection and removal of the cyst is required to prevent the foreboding complications associated with the lesion as the prognosis is excellent and recurrence is rare if completely removed (8).

CASE REPORT

A 23 year-old male patient reported to the Department

of Oral and Maxillofacial Surgery with the chief complaint of gradually increasing intraoral swelling since 15 days in upper front teeth region. Patient revealed history of root canal treatment performed on maxillary right lateral incisor. Since 15 days he has noticed a buccal bulge over near upper right lateral incisor region. Initially, it was a small sized swelling which has gradually expanded and achieved a large size since 2 days with continuous mild pain in the upper right anterior region.

The intraoral periapical radiograph and CBCT revealed a root canal treated right lateral incisor with periapical radiolucency and slight radiopacity associated with it. CBCT also revealed maxillary right impacted canine (13) and also an periapical radiolucency about 1cm × 1 cm associated with teeth and causing upward displacement of the maxillary sinus lining (Figure 1).



Figure 1: Orthopantomogram Showing Impacted Right Canine With Periapical Radiolucency.

On the basis of history and clinical finding, a provisional diagnosis was considered as periapical cyst and the cyst enucleation with extraction of (12) and 13 was planned under local anesthesia. There was no significant medical history that influences the

procedure and prognosis. For enucleation greater palatine, infraorbital nerve block and nasopalatine nerve blocks were administered with 2% Local anesthesia with adrenaline (1:200000) Crevicular incision was given and the buccal full thickness mucoperiosteal flap was elevated to expose the area of lesion (Figure 2).



Figure 2: Exposure Of Impacted Right Canine And Enucleation Of Cyst.

Existing cortical bone window was created and underlying pathology was exposed and sufficient space was made for thorough curettage. Care was taken in separating the lesion from the infraorbital nerve. Extraction of 12 and impacted canine (13) was performed and the lesion was removed in to (Figure 3) and sent for histopathological examination.



Figure 3: Post Operative Figure Showing Removal Of Impacted Right Canine.

Irrigation and debridement was carried with betadine and normal saline. Primary closure was done with 3-0 silk (Figure 4,5).



Figure 4: Specimen Showing Extracted Impacted Right canine And Intact Soft Tissue Periapically.



Figure 5: Post Operative Image.

Post-operative instructions were given and the patient was prescribed antibiotics and anti-inflammatory drugs. After 1-week patient was recalled. Histopathological examination gives diagnosis of dentigerous cyst- a clinicopathological co-relation. Follow-up was done after 2 months which shows a normal buccal contour with no other complaints.

DISCUSSION

A Dentigerous cyst or follicular cyst is one of the most common type of developmental odontogenic cysts. As the term dentigerous literally means “tooth bearing,” they are associated with the crown of impacted, embedded, or partially erupted tooth (9).

Second or third decade is commonly associated with male population, and about 70% of cases are noted involving the mandible and 30% the maxilla (7).

Two types of dentigerous cyst are reported, namely, inflammatory and developmental in origin. Developmental type of cyst develops in a mature permanent tooth as a result of fluid accumulation, whereas the inflammatory counterpart develops in an immature permanent tooth (12).

The developmental histopathogenesis of dentigerous cyst is constructed on the bases of extrafollicular and intrafollicular theories. The extrafollicular theory of origin of dentigerous cyst does not hold good as the evidence reported for this origin is more inclined to be envelopmental or follicular odontogenic keratocyst.

The intrafollicular theory postulates the possibility of cyst formation due to accumulation of fluid between the layers of inner and outer enamel epithelia after crown formation or that it can be attributed to the degeneration of stellate reticulum at an early stage of tooth development resulting in the cyst formation associated with enamel hypoplasia (10-11). Main's intrafollicular theory contributed to the same theory of developmental origin explaining that the pressure exerted by the impacted tooth on the follicle obstructs the venous outflow and induces rapid transudation of serum across the capillary walls, which in turn can increase the hydrostatic pressure thus causing the separation of crown from the follicle with or without reduced enamel epithelium. However, in addition to these views on the developmental origin, periapical inflammation of nonvital deciduous teeth has also been suggested as a factor triggering the formation of inflammatory dentigerous cyst of the unerupted permanent successors (13).

Benn and Altini (14) considered three possible mechanisms in the histogenesis of IDCs:

1. Intrafollicular developmental cysts formed around the crowns of permanent tooth that become secondarily inflamed, as a result of periapical inflammation spreading from nonvital deciduous predecessors.
2. Radicular cysts at apices of nonvital deciduous teeth that fuse with the follicles of unerupted permanent successors. "Eruption" of successor teeth into the cystic cavity results in the formation of extrafollicular dentigerous cyst.
3. Periapical inflammation from any source, but usually from nonvital deciduous teeth spreading to involve follicles of unerupted permanent successors. Dentigerous cysts are usually small asymptomatic lesions that are an incidental finding on routine radiographs; hence, when the cyst is smaller in size, it would be difficult to differentiate it from a larger but normal dental follicle. A working definition to rule out this radiographic confusion is that, a DC exists only when the distance between the crown and dental follicle is >2.5 to 3.0 mm (7).

However, some DC may grow to considerable size causing painless bony expansion until secondary infected (13). Radiographs alone may not be sufficient to show the full extent of the lesion, and computed tomography (CT) imaging may also be necessary to avail the exact information about the lesion's size, content, and origin.

The epithelium of inflamed DC demonstrates hyperplastic epithelium with rete ridges and the fibrous

cystic capsule with inflammatory infiltrate (14-16). Metaplastic changes are occasionally noted within the epithelial lining in the form of mucous-producing cells or secretory cells, such as goblet cells. Pseudostratified ciliated columnar epithelium has also been reported (8).

Treatment of DC depends on size, location, and disfigurement and often requires bone removal to ensure total removal of cyst especially in case of large ones (17). These cysts are frequently treated surgically, either by enucleation or by marsupialization. Marsupialization or decompression technique has been advocated widely for the treatment of DC in young patients (12). Marsupialization of cystic lining creates an accessory cavity to relieve intracystic pressure and accelerate the healing of the cystic lesion (12).

CONCLUSION

When a patient presents with bony swelling associated with any tooth, the differential diagnosis should be Dentigerous Cyst, radicular cyst, odontogenic keratocyst, ameloblastomas, odontogenic fibromyxoma, odontomas, and cementoma. Ameloblastic transformation within the cystic space is the most important factor to be considered during the treatment planning of these cases. Marsupialization is a preferred treatment modality especially in young children and long-term follow-up of cases treated with marsupialization usually reveals reduction in size of the lesion and normal eruption of involved teeth. But, in case of infected cysts, enucleation is a better choice of treatment to minimize disfigurement and to avoid complications.

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