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.

INTRODUCTION
Jaws anchor a wide variety of cysts and neoplasms, due in large part to the tissues involved in tooth formation. 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 jaw. Their frequency estimated in general population has been at 1.44 for every 100 unerupted teeth. 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. As with other cysts, DC can cause cortical plate expansion, involvement of teeth and subsequent destruction of the tissues as it expands.

Third molars, canines, and second premolars are the teeth that are most commonly involved. Radiographically, DCs show typically unilocular radiolucency with a well defined sclerotic border. 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.

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 radioopacity 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

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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).

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.

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

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

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

Figure 4: Specimen Showing Extracted Impacted Rightcanine 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
envolopmental 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. 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
infected13. Radiographs alone may not be sufficient to
show the full extent of the lesion, and computed
tomography (CT) imaging may also be necessary to
avoid 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.
Metaplastic changes are occasionally noted within the
epithelial lining in the form of mucous-producing
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.
Ameloblastomatic 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
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.

REFERENCES
1. Regezi JA. Odontogenic cysts, odontogenic
tumors, fibrousseous, and giant cell lesions of the
jaws. Mod Pathol 2002 Mar;15(3):331-341.
2. Veera SD, Padanad G. Dentigerous cyst with
recurrent maxillary sinusitis: a case report with
literature review. Int J Appl Dent Sci 2015;1(4):16-19.
3. Bonder L, Woldenberg Y, Bar-Ziv J.
Radiographic features of large cystic lesions of the
jaws in children. Pediatr Radiol 2003
Jan;33(1):3-6.
4. Szerlip L. Displaced third molar with dentigerous
cyst – an unusual case. J Oral Surg 1978
Jul;36(7):551-552.
5. Elango S, Palaniappan SP. Ectopic tooth in the
roof of the maxillary sinus. Ear Nose Throat J
1991 Jun;70(6):365-366.
6. Goh YH. Ectopic eruption of maxillary molar
tooth – an unusual cause of recurrent sinusitis. Singapore Med J 2001 Feb;42(2):80-81.
7. Guruprasad Y, Chauhan DS, Kura U. Infected dentigerous cyst of maxillary sinus arising from an ectopic third molar. J Clin Imaging Sci 2013;3(Suppl 1):7.
8. Mhaske S, Ragavendra RT, Doshi JJ, Nadaf I. Dentigerous cyst associated with impacted permanent maxillary canine. People J Sci Res 2009 Jul;2(2):17-20.
9. Browne RM. The pathogenesis of odontogenic cysts: a review. J Oral Pathol 1975;4(1):31-46.
10. Shear M. Cysts of the oral regions. 3rd ed. Oxford: Write; 1992. p. 75-79.
11. Donath K. Odontogenic and non-odontogenic jaw cysts. Dtsch Zahnarzt Z 1985 Jun;40(6):502-509.
12. Kumar R, Singh RK, Pandey RK, Mohammad S, Ram H. Inflammatory dentigerous cyst in a ten-year-old child. Natl J Maxillofac Surg 2012 Jan–Jun;3(1):80-83.
13. Mohan KR, Natarajan B, Mani S, Sahuthullah YA, Kannan AV, Doraismwamy H. An infected dentigerous cyst associated with an impacted permanent maxillary canine, inverted mesiodens and impacted supernumerary teeth. J Pharm Bioallied Sci 2013 Jul;5(Suppl 2):S135-S138.
14. Benn A, Altini M. Dentigerous cysts of inflammatory origin. A clinicopathologic study. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1996 Feb;81(2):203-209.
15. Koca H, Esin A, Aycan K. Outcome of dentigerous cysts treated with marsupialization. J Clin Pediatr Dent 2009 Winter;3-168.
16. Kozelj V, Sotosek B. Inflammatory dentigerous cysts of children treated by tooth extraction and decompression – report of four cases. Br Dent J 1999 Dec 11;187(11):587-590.
17. Pramod DSR, Shukla JN. Dentigerous cyst of maxilla in a young child. Natl J Maxillofac Surg 2011 Jul-Dec;2(2):196-199.