

Review Article

Keratinizing Dentigerous Cyst: A Review of Literature

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ABSTRACT:

A dentigerous cyst is a developmental cyst of odontogenic origin which develops around the fully-formed crown of an unerupted tooth. The significance of keratinization in odontogenic cysts is not fully known, but keratinization is the final product of epithelial cell differentiation. However, dentigerous cysts, thought to arise from reduced enamel epithelium, are products of end cells, i.e. cells that have completed synthesis (enamel formation). It is possible that the dentigerous cyst is a primordial variant, arising from more primitive cells of the developing enamel organ.

Key words: Dentigerous cyst, Keratinization, Reduced enamel epithelium, Primitive cells.

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INTRODUCTION

Odontogenic cysts were first described by Gorlin and co-workers in 1962. The dentigerous cyst (*Latin: Dens = tooth, gerere = to bear*) is the second most common odontogenic cyst of epithelial origin accounting for 15% of all true cysts in the jaw. Also known as follicular cyst, a dentigerous cyst develops when a follicle is separated from the crown of a developing tooth. As a result of this, fluid accumulates between the reduced enamel epithelium and tooth crown forming a cystic cavity that surrounds the crown of an unerupted tooth on the cemento-enamel junction¹⁻⁴.

Dentigerous cyst is not keratinized but when keratinization is present in the dentigerous cyst, it is known as Keratinizing Dentigerous cyst. Orthokeratinized odontogenic cyst (OOC) has specific histopathological features and clinical behaviour. Histogenesis may be from the remnants of the dental lamina or from the basal cell layer of the oral mucosal epithelium⁵. These cysts can grow large in size causing cortical expansion and presents as a swelling, along with pain, although in most cases, it can be detected incidentally during a radiograph examination⁶. It is a rare entity and has been reported in the world literature only three times to the best of my knowledge. Hence, it is

suggested that before making final diagnosis of the cyst by histopathological examination which is utmost important and valuable diagnostic tool, we must evaluate the clinical and radiological examinations carefully and the differential diagnosis of the lesion must be taken into great consideration as this cyst may mimic many alarming life threatening conditions.

DISCUSSION

Odontogenic cyst is most commonly seen between 10 – 30 years of age and may remain asymptomatic throughout life. In such cases, it is usually diagnosed incidentally on radiograph. The cyst may cause pathological fracture or get secondarily infected. Rare incidents of malignant transformation into squamous cell carcinoma, mucoepidermoid carcinoma, or an ameloblastoma have also been reported in literature.³ It is most commonly associated with crown of permanent impacted tooth, and involvements of primary teeth are infrequent.

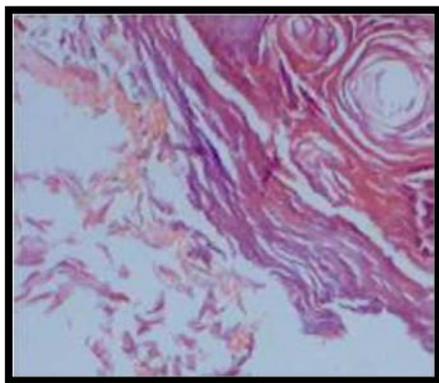
Gold in 1963 introduced the terms keratinizing and calcifying odontogenic cysts. Dentigerous cyst has been defined as one which is attached at the cement-enamel junction and encloses the crown of an unerupted tooth.⁵⁻⁶ Dentigerous cyst is commoner in the 3rd & 4th decades

(Shear, 1992). But it has also been reported in younger age, as in a 13 years old female by Shah N. J.(1994). Dentigerous cyst most commonly develops around the crown of the 3rd mandibular molar tooth⁷⁻⁸. There are three radiological variations of dentigerous cyst:- (1) The central variant: crown is enveloped symmetrically, (2) in the lateral type cyst appears on one aspect of the crown, and in the (3) circumferential type the entire tooth appears to be enveloped by cyst.⁹

Philipsen in 1956 suggested the term Odontogenic Keratocyst (OKC) for all Odontogenic cysts, regardless of type, showing keratinization of the epithelium. More recently, an OKC is defined by other characteristics of the epithelium such as basal palisading, hyperchromatism of nuclei and cell thickness of the epithelium and not merely the presence of keratinization. The term “keratinizing odontogenic cyst” has been suggested for any cyst, regardless of the type, that shows keratinisation.¹⁰

The significance of keratinization in odontogenic cysts is not fully known. Keratinization is the final product of epithelial cell differentiation. However, dentigerous cysts, thought to arise from reduced enamel epithelium, are products of end cells, i.e. cells that have completed synthesis (enamel formation). It is possible that the dentigerous cyst is a primordial variant; arising from more primitive cells of the developing enamel organ¹¹. Keratinizing dentigerous cyst is an unusual histological variant of odontogenic cyst and very rarely arises from supernumerary tooth. Early recognition and intervention plays a key role in its management due to its malignant potential as does long term follow up for any recurrences. Aesthetic restoration also has to be considered in its management as it involves a prominent part of the face. Keratinizing dentigerous cyst which, to the best of our knowledge, has been reported only twice in the literature in 1971 and 2014^{12,13}.

The keratinizing dentigerous cyst is an uncommon variant of the dentigerous cyst. Long term follow up of patients presenting with a keratinizing dentigerous cyst is advised to observe its potential for recurrence or malignant transformation since very little is known about this unusual entity.



Microphotograph showing lamellar sheets of keratin.¹⁰

TREATMENT

The management depends on the age of the patient, site and extension of the cyst. Various treatment modalities have been proposed. Basic surgical procedure includes marsupialisation or enucleation. The modified procedures include a combination of both, use of Carnoy's solution following enucleation, and use of bone grafts to fill the cystic cavity. The recurrence rate of dentigerous cyst is very low as when compared to other jaw cysts.¹ Cysts that are small and close to osteomeatal complex can be removed endoscopically. For all others especially those with lateral and posterior extensions, the best approach is Caldwell-Luc or a combined approach. The large residual bony cavities may be obliterated with bone grafts.³

CONCLUSION

Dentigerous cyst is most commonly associated with impacted tooth of the jaw i.e. 3rd molars followed by maxillary canine, encircling the neck of crown of impacted tooth. OKC should also be considered as it has similar features to those of both dentigerous cyst and AOT. Keratinizing dentigerous cyst is an unusual histological variant of odontogenic cyst and very rarely arises from supernumerary tooth. Keratinizing dentigerous cyst has been reported only for thrice in the world literature in 1971, 2014 & 2016, to the best of our knowledge, so very little information is present regarding this entity. Major role is played by early diagnosis and intervention in management due to its chances of malignant transformation. Therefore, accurate interpretations of keratinizing odontogenic cysts are fallacious as it gives rise to erroneous radiographic picture which may also mimic other non-keratinizing odontogenic cysts. Hence, careful clinical, histopathological and radiological correlation along with molecular and immunohistochemical analysis is needed for its final diagnosis and proper treatment planning

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