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Case Report

Dentigerous cyst- A case report and review of the literature

Rupinder Kaur^{1*}, Harmunish Singh¹, Pushpinder Grewal¹

¹Dr. Mann Maxillofacial Surgery and Implant Centre, Ludhiana, Punjab, India



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ABSTRACT

Dentigerous cysts are the common type of developmental odontogenic cyst that encloses the crown of unerupted tooth. Dentigerous cyst develops by the accumulation of fluid between reduced enamel epithelium and tooth crown and is attached to the tooth at cemento-enamel junction. They are more common in males than in females and occurs mostly in permanent dentition. The majority of dentigerous cysts involves mandibular third molars, maxillary canines, mandibular premolars and maxillary third molars. This article presents a case of unilateral mandibular dentigerous cyst associated with impacted mandibular third molar in a patient treated by enucleation.

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1. Introduction

Dentigerous cysts, also known as follicular cyst is an developmental odontogenic cyst associated with impacted tooth with frequency estimation of 1.44 in every 100 unerupted teeth.^{1,2} Dentigerous cysts are the second most common among developmental odontogenic cysts that develops as a result of fluid accumulation between the reduced enamel epithelium and crown of unerupted tooth at cemento-enamel junction. It commonly affects males as compared to the females with high frequency among 2nd to 4th decades.³⁻⁵ Dentigerous cysts commonly occur in permanent dentition and is uncommon in childhood. Among 75% cases located in the mandible, it commonly involves mandibular third molars, maxillary third molar, maxillary canine and mandibular second premolars.^{6,7}

The dentigerous cysts are usually asymptomatic unless it is inflamed/ infected and is mostly discovered on radiographs when tooth has failed to erupt or is missing.^{3,8} Radiographic features of dentigerous cysts depicts unilocular radiolucent areas associated with crown

of unerupted teeth with well-defined sclerotic margins unless infected.^{2,9}

Histopathologically, it is composed of thin fibrous cystic wall, with epithelial lining of non keratinized squamous epithelium resembling reduced enamel epithelium and is 2-4 layers thick.¹⁰ Treatment involves Enucleation alongwith removal of the associated tooth and the large cyst is treated by marsupialization. The prognosis of the dentigerous cyst is excellent and the lesion almost never recurs.^{11,12}

2. Case Report

A 40- year old female presented with swelling of right side of lower jaw present since one month. On examination, slight facial asymmetry was presented with respect to right lower jaw. Complete history was taken and it was reported by the patient that the swelling is painful since a week during mastication. Medical history was unremarkable.

Intraoral examination revealed a swelling over right lower third molar area which on palpation was firm and there was no discharge of pus or any inflammatory signs from the site. Orthopantomogram revealed a radiolucency around right lower impacted third molar (Figure 1). The

* Corresponding author.

E-mail address: matharoo_rupinder@yahoo.com (R. Kaur).

42 radiolucency was well-circumscribed and unilocular. Our
43 clinical diagnosis was Dentigerous Cyst.



Figure 1: Pre-operative orthopantomogram

44 Under Local anesthesia, cystic enucleation (Figure 2)
45 was performed for the removal of the cyst followed
46 by bone grafting with bovine noble creos bone graft
47 (Figures 4 and 5). Creos xenoprotect membrane was
48 used for the protection of the nerve and guided tissue
49 regeneration (Figure 3). The cystic lining was later sent for
50 histopathological examination.

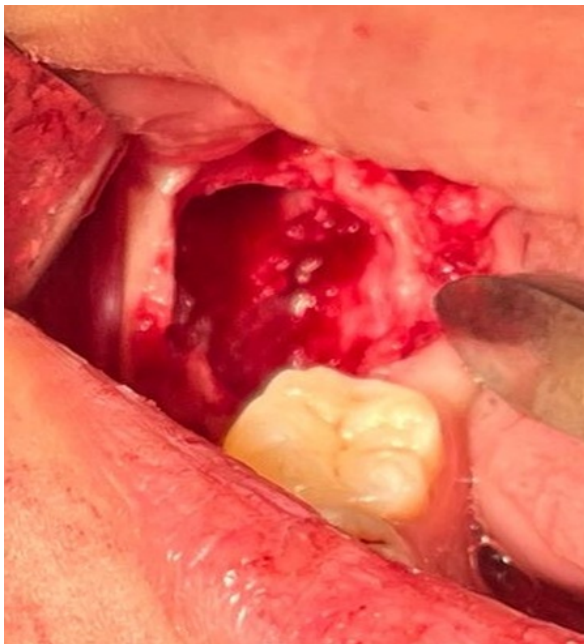


Figure 2: After cystic enucleation

51 Macroscopically, Soft tissue specimen measuring
52 approximately 1.5cm x 1cm and 5mm x 5mm, pale brown in
53 color, soft in consistency was sent for the histopathological
54 examination and microscopic examination revealed cystic
55 lining of stratified squamous epithelium, 3-4 layer thick



Figure 3: Placement of the creos xenoprotect membrane after cystic enucleation



Figure 4: Placement of bone graft

56 with the presence of bony trabeculae and dystrophic
57 calcifications in addition with intense inflammatory cells.
58 The above findings were suggestive of dentigerous cyst.
59 There was no evidence of malignancy seen (Figure 6).

60 The post-operative examination revealed complete
61 recovery without any complications and the patient was
62 advised for the regular follow-ups. After 3 months, Implant
63 placement followed by fabrication of crown was done to
64 restore the function and orthopantomograph was performed
65 after 6 months and the radiographic findings revealed
66 successful bone regeneration and healing (Figure 7).

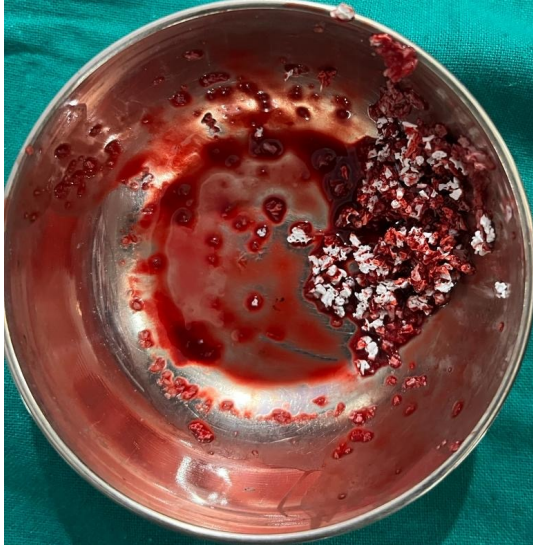


Figure 5: Bovine Noble creos bone graft

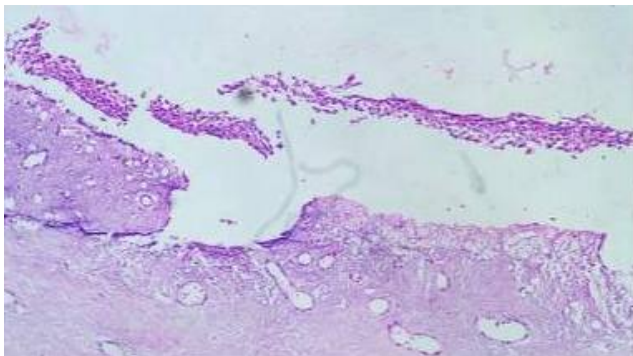


Figure 6: Cystic lining of stratified squamous epithelium



Figure 7: Post- operative orthopantomograph showing bone regeneration taken after six months

3. Discussion

Dentigerous cysts are the second most common odontogenic cysts, frequently found in mandible with more prevalence among males.^{2,3,7} It is associated mainly with crown of impacted tooth and may grow into a larger size before getting diagnosed. It is only painful when infected and mostly discovered during routine radiographs.^{1,2,5}

The clinical presentation of dentigerous cyst depicts that the cyst is asymptomatic and remains undiagnosed by the patient until accidentally diagnosed or becomes infected. It is a slow-growing, benign odontogenic cyst which may be developmental or inflammatory in origin. The exact etiology remains unclear but various theories were put forward to explain the pathogenesis of dentigerous cyst. Among those, one theory suggests that when the tooth is erupting, it exerts pressure on its follicle leading to fluid accumulation between reduced enamel epithelium and the crown of that tooth. Another theory suggests that it is caused due to inflammation at the apex of deciduous tooth which stimulates the developing permanent tooth germ and leads to accumulation of fluid.^{2,7,10,13}

Radiographically, three radiological variations of Dentigerous cyst are observed (Figure 8).

1. Central variety: Most common and characterized by symmetrical radiolucent cavity enveloping the crown of unerupted tooth.
2. Lateral variety: Radiological appearance present laterally along the root surface as a result of follicle dilation on one aspect of the crown, partially covering crown of unerupted tooth.
3. Circumferential type: Cyst envelops the entire tooth due to follicle expansion occurring in this manner.^{1,14}

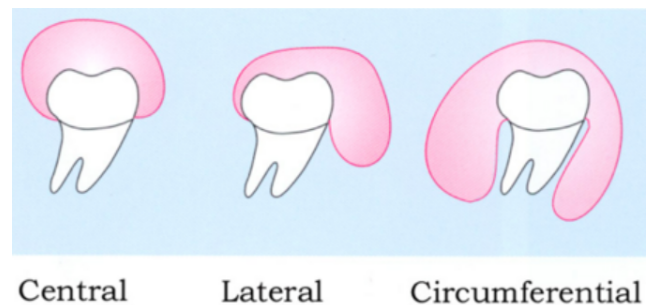


Figure 8: Three radiological variations of dentigerous cyst

Cyst expansion takes place through the increase in hydrostatic pressure of its contents and it is unicentric expansion. The presence of inflammatory cells also play role in rise of intracystic osmotic tension leading to further expansion of the cyst.^{15,16}

Erupting tooth → Pressure on impacted follicle → Venous stasis → Transudation of serum → Increase in

106 hydrostatic pressure → Cyst expansion.

107 Microscopic features of dentigerous cyst consists of
108 cystic lining of stratified squamous epithelium. Rete peg
109 formation is observed alongwith thickening of cystic
110 epithelial lining in cases where the cyst is secondarily
111 infected.^{16,17} The underlying connective tissue may be
112 fibrous or myxomatous and consists of thin epithelial lining
113 which is 2-4 layers thick in case of dentigerous cyst
114 whereas when the cyst became infected/inflamed, it exhibits
115 inflammatory cells, mucus producing cells and occasional
116 dystrophic calcifications might be observed.¹⁸

117 The Differential Diagnosis for dentigerous cyst involves
118 Unicystic ameloblastoma, adenomatoid odontogenic
119 tumor (AOT), Odontogenic Keratocyst (OKC).^{12,17} The
120 differentiation between unicystic ameloblastoma and
121 dentigerous cyst depicts that unicystic ameloblastoma
122 grows laterally whereas in dentigerous cyst, expansion
123 of buccal cortex takes place as cyst grows buccally.¹⁹ To
124 rule out adenomatoid odontogenic tumor, radiographic
125 radiolucency plays a role. AOT is seen often in maxilla
126 anterior and the radiolucency involves both coronal
127 and radicular aspect of the involved tooth whereas in
128 dentigerous cyst only coronal aspect of the impacted tooth
129 is involved.²⁰ Histological evaluation is the main criteria
130 for ruling out Odontogenic Keratocyst from dentigerous
131 cyst.²¹

132 Management of the dentigerous cyst involves proper
133 assessment and is based on the age of the patient, size
134 and location of the cyst and engaged vital structures.²²
135 The treatment modalities of the dentigerous cyst includes
136 enucleation of the cyst with or without removal of
137 the involved tooth. When the cyst if of larger size,
138 marsupialization is the treatment of choice. Another
139 procedure is Decompression of the cyst in which the
140 excision of the cyst is done once it shrinks in order to
141 preserve the involved tooth.^{11,12,22}

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143 None.

144 5. Conflict of Interest

145 None.

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Author biography

Rupinder Kaur, General Dentist  <https://orcid.org/0009-0001-9022-0132> 201

Harmunish Singh, Maxillofacial Surgeon 204

Pushpinder Grewal, General Dentist 205

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