

Dentigerous Cyst with Odontome: A Case Report

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ABSTRACT

Delayed tooth eruption is the most common complaint of a patient which can lead to the diagnosis of two main odontogenic anomalies, dentigerous cyst and odontome. This article presents a case report of a 13 year old male child with a complex odontome and a dentigerous cyst resulting in delayed eruption of both the first and second mandibular molars.

Key words: Delayed eruption, odontogenic anomalies.

INTRODUCTION

Tooth eruption is a normal physiologic process that happens at various stages starting from the age of 6 months to 17 years. This physiologic process can be hindered by various pathologies one of which being a cyst, most commonly the dentigerous cyst. The epithelial remnants of the tooth forming organs are the source of dentigerous cyst formation and hence the most common developmental odontogenic cyst. Another pathology which can obstruct the normal eruption pathway of a tooth is an odontome. In 1867, Paul Broca coined the term "Odontoma" which is considered to be a benign odontogenic tumour and a developmental anomaly resulting from the growth of differentiated epithelial and mesenchymal cells.⁸

Case report

A 13 year old male patient reported to the Department of Oral Medicine and Radiology, with a chief complaint of swelling in the left side of the face since 1 month and unerupted left lower back teeth. History revealed that the swelling started 1 month back on the left side of the face, which was initially smaller in size and gradually increased in size to attain a bigger size as noticed at the time of

examination. There was no associated pain but unerupted lower left molar.

Extra oral examination revealed asymmetry due to a swelling in the left side of the face along the inferior border of the mandible measuring approximately 2.5 x 3cms, ill-defined margins, smooth surface extending superiorly along the line joining the corner of the mouth to the tragus; inferiorly along the lower border of the mandible. Anterior and posterior margins were not well defined. On palpation all the inspectory findings were confirmed, no local change in the temperature, soft in consistency and non-tender. Single submandibular lymph node is palpable on the left side measuring 1x1cm, round in shape, mobile and non-tender. Intra oral examination revealed a single swelling on the alveolar mucosa in relation to 36, 37 region measuring 2x3cms, with smooth surface extending superiorly from the alveolar mucosa in relation to 36, 37 region; inferiorly upto the mandibular buccal sulcus; anteriorly distal to 35 and posteriorly till the retromolar region. Swelling does not extend to the lingual aspect of the alveolar mucosa. On palpation all the inspectory findings were confirmed, swelling was soft in consistency and non-tender. Correlating the chief complaint,

history and clinical features, the condition was provisionally diagnosed as AN ODONTOGENIC CYST IN RELATION TO 36, 37 REGION.

The patient was subjected to radiological investigations, an intraoral periapical radiograph, occlusal radiograph and an orthopantomograph was taken. Radiographs revealed:

- Presence of an oval shaped irregular radio opacity measuring 1.5x2.5cm approx in 36, 37 region extending anteriorly from the distal aspect of 35, posteriorly till the mesial aspect of the dental follicle of 38, superiorly along the alveolar crest and inferiorly 3mm from the inferior alveolar canal. The radio opacity is surrounded by a thin radiolucent border; suggestive of COMPLEX COMPOSITE ODONTOME IN RELATION TO 37.
- Presence of a radio opaque structure resembling the morphology of a tooth – 36, 1mm below the irregular radio opacity in the 36, 37 region with the mesial and distal roots of 36 tilted distally and is present 1mm above the inferior border of the mandible. Presence of a well defined radiolucency surrounding the crown of 36 with a thin radio opaque border extending from the cement-enamel junction of 36 on the mesial aspect to the cement-enamel junction of 36 on the distal aspect, occlusal radiograph shows expansion of the left cortical plates of the mandible in relation to 36, 37 region; suggestive of DENTIGEROUS CYST IN RELATION TO 36.

By correlating history, clinical features and radiographic features a final diagnosis of COMPLEX COMPOSITE ODONTOMA IN RELATION TO 37 AND DENTIGEROUS CYST IN RELATION TO 36 was made. Surgical removal of the odontome was performed under local anesthesia. Marsupialization of the dentigerous cyst was done and the impacted tooth (36) was subjected to orthodontic extrusion.

DISCUSSION

Dentigerous cysts were also called as “Follicular cysts” but the term dentigerous is preferred, the literal meaning being ‘tooth bearing’ (Browne & smith, 1991).¹¹ Studies reveal that dentigerous cyst constitute more than a quarter of all jaw cysts. It is more common during the 2nd – 3rd decade of life with a slight predilection for males. It occurs due to the accumulation of fluid between reduced enamel epithelium and the tooth crown especially in the mandibular third molar region.

Theories of dentigerous cyst formation:¹

1. Intrafollicular theory: According to this theory the cyst formation occurs due to fluid accumulation between the layers of inner and outer enamel epithelium after crown formation.
2. Enamel hypoplasia theory: This theory suggests that dentigerous cyst formation occurs due to degeneration of stellate reticulum at a very early stage of tooth



Fig. 1: Intra oral picture



Fig. 2: Occlusal Radiograph

development. There is also associated enamel hypoplasia.

3. Main's theory: This theory suggests that impacted tooth exerts pressure on the follicle with resulting obstruction of venous outflow. This induces rapid transudation of fluid across the capillary walls. This causes an increase in the hydrostatic pressure exerted causing separation of the crown from the follicle. This may be associated with reduced enamel epithelium.

Characteristic Features of Dentigerous cyst:^{4,10,11}

Dentigerous cysts occur twice as often in boys than girls, in the age group of 6-12 years and ten times more common in the lower jaw.¹⁰ These cysts usually presents as a slow growing painless swelling associated with an unerupted tooth. The radiographic appearance of a dentigerous cyst is a unilocular radiolucency with a well defined sclerotic border associated with an impacted tooth. It can be associated with displacement of the adjacent teeth with root resorption. Three types of dentigerous cysts are identified radiologically:

Imaging

Conventional radiographs like occlusal and orthopantomography are usually sufficient to



Fig. 3: Orthopantomograph

diagnose dentigerous cyst but in larger cysts Computed Tomography can be indicated. CT imaging displays bony details and gives exact information about the size, origin, content and relationships of the lesion involving the mandible.⁶

Odontomas constitute about 22% of all the odontogenic tumours. The cause for odontome remains unknown but mostly it may occur due to any local trauma, inflammation, infection or hereditary anomaly.⁹

Classification of Odontomas

According to 2005 WHO classification of odontogenic tumours, there are two types of odontomas,^{2,3,9}

- i) Compound made up of more or less rudimentary teeth (common in maxillary anterior tooth region) and
- ii) Complex type with calcified structure, which bear no great resemblance to the normal anatomical arrangement of dental tissue (common in mandibular first and second molar regions).

Thomas and Goldman Classification:^{5,9}

- i) Geminated composite odontomes- two or more, more or less well developed teeth



Fig. 4: Post operative radiograph



Central Type



Lateral Type



Circumferential Type

- fused together.
- ii) Compound composite odontomes-made up of more or less rudimentary teeth.
 - iii) Complex composite odontomes- calcified structure, which bears no great resemblance to the normal anatomical arrangement of dental tissues.
 - iv) Dilatedodontomes- the crown or root part of tooth shows marked enlargement.
 - v) Cystic odontomes- an odontome that is normally encapsulated by fibrous connective tissue in a wall of cyst.

Odontomas have also been classified as^{2,3,9}

- i) Central odontome (present inside the bone) and
- ii) Peripheral odontome (which occur in the soft tissue covering the tooth bearing portion of jaws).

Radiologically, the complex odontome appear as single radiopaque mass with the density somewhat greater than that of bone. It usually does not exceed the diameter of the teeth in that region. The radiopaque mass invariably is round or ovoid and usually has smooth margins. The margins sometimes appear lobulated or spikelike. The internal elements occasionally have a mottled appearance because of the mineralized components, consisting of enamel, dentin, and cementum versus dental papilla-like material, pulp and uncalcified enamel matrix, dentoid and cementum. Sometimes the calcified mass takes on a sunburst appearance.¹²

Odontomas are mostly asymptomatic but certain clinical signs can be an indicator for odontomas like unerupted tooth, expansion of the cortical bone and displacement of teeth. The

treatment for odontomes in both primary and permanent dentition is their surgical removal. If odontomes are extirpated without disturbing the underlying tooth germ, the eruption of the impacted teeth can then be expected spontaneously or after orthodontic traction.⁷

Dentigerous cysts and odontomas are mostly asymptomatic and are found on radiological investigations. In the case reported above there was a painless swelling with a complaint of unerupted tooth which was found out to be a central type of dentigerous cyst. The surprising element in this case was the presence of a complex odontome above the dentigerous cyst. Hence this case represents a condition with an unerupted first and second mandibular molar, one due to complex composite odontome formation and another due to the obstruction of the eruption pathway by the odontome and formation of a central type dentigerous cyst. In our case the mandibular second molar was seen as a developmental anomaly, a complex composite odontome the formation of which could have pushed the mandibular first molar down near the inferior border of the mandible.

CONCLUSION

The prognoses of most dentigerous cysts are excellent with lesser percentage of recurrence. Hence prompt diagnosis and management can prevent various complications, because if left untreated dentigerous cysts interrupt tooth eruption as with this case and also causes bone expansion, resorption and displacement of adjacent structures. A proper clinical examination accompanied by necessary radiographs can help to discover hidden developmental anomalies like the one in this case.

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