Differential Diagnosis for Pericoronal Radiolucencies affecting Jaws – A Case Report on Dentigerous Cyst

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Abstract

Most of the times it is difficult for the clinicians to confirm the clinical diagnosis without investigations as the clinical picture of oral lesions may be similar to many other conditions. Hence, appropriate clinical examination, coupled with radiological and histopathological investigations could aid in appropriate diagnosis and management of the lesions. This article elaborates on differential diagnosis for pericoronal radiolucencies affecting the jaws in a patient presented for a routine dental examination. Differential diagnosis helps us to diagnose a specific lesion by eliminating those lesions which appear clinically similar. As advanced diagnostic aids are available, decision-making has become much easier for these lesions.

Key words: ***D****entigerous* ***C****yst,* ***D****ifferential* ***D****iagnosis,* ***I****mpacted* ***T****ooth,* ***P****ericoronal* ***R****adiolucencies*

Introduction

Pericoronal radiolucency are most commonly seen associated with an unerupted tooth during routine radiographic investigation, which could be a normal observation or a pathologic process. A proper clinical diagnosis with necessary investigations could aid in better diagnosis and management of these lesions. Differential diagnosis for these lesions helps us to formulate a proper treatment plan and manage the suspected lesions. We present a case of bilaterally occurring dentigerous cyst involving the third molar in a non - syndromic 49year old man.

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Case Report

An asymptomatic 49-year-old male patient presented for a routine dental examination. Clinical examination revealed a mild bulge on the lingual side of the missing mandibular third molar regions bilaterally. Panoramic radiograph showed impacted mandibular third molars bilaterally with well- defined cystic lesion associated with the impacted molars (Fig 1). Subsequently a CBCT was taken to visualize the extent and configuration of the cystic lesion. CBCT revealed a horizontally impacted tooth within a radiolucent lesion with relation to mandibular right 3rd molar measuring 17.91mm superoinferiorly from the level of the alveolar crest to the lower border of the mandible and 19.80mm anteroposteriorly. Mesial and distal root of 47 appeared to be blunted in the sagittal section (Fig 2).

Axial section revealed the lesion extending 19.84mm anteroposteriorly and 12.15mm buccolingually respectively (Fig 3). Evidence of expansion and thinning of lingual cortical plate throughout the extent of the lesion with a breach was seen in the lingual cortical plate. Inferior displacement of the mandibular canal was

also seen throughout the extent of the lesion with respect to 47.

Lower left 3rd molar showed an evidence of well-defined radiolucent lesion with an impacted tooth. Superoinferiorly it extended from the level of the alveolar crest, immediately distal to 37, till the inferior border of the mandible measuring approximately 18.66mm; anteroposteriorly, it extended from the apical portion of distal root of 36 till the apex of the root of horizontally impacted 38 measuring about 26.86mm and 14.31mm buccolingually. The mandibular canal was displaced inferiorly throughout the extent of the lesion with expansion and thinning of lingual cortical plate throughout the extent of the lesion; but without any evidence of discontinuity in the corticated border. Blunting of both the mesial and distal root apex of 37 was seen.

Diagnosis and management

Vitality tests suggested that both mandibular 2nd molar teeth on either side were vital. On aspiration, chocolate-brown fluid was obtained. Histopathologic evaluation of the aspirate revealed cholesterol clefts, chronic inflammatory cell infiltrate and few epithelial cells scattered in fibrinous background.

Under general anesthesia, the impacted mandibular third molars on either side were first extracted followed by enucleation of the cyst lining and evacuation of its contents. Platelet rich fibrin was prepared and placed into the defect followed by primary closure. Postoperatively, the patient recovered uneventfully. Patient reported numbness in left half of lower lip but this resolved completely within 2 weeks. No other complications were encountered and the patient was placed on follow up.

Histopathologic examination of cystic contents on both right and left sides revealed the presence of a lining of 2-4 cell thick non-keratinized epithelium on the cystic lumen and supported by an inflamed connective tissue capsule which was compatible with diagnosis of dentigerous cyst. The cystic capsule is moderately dense and exhibits chronic inflammatory cell infiltrate (predominantly plasma cells and lymphocytes), cholesterol clefts, haemorrhage and several bacterial colonies (Fig 4,5)

Differential diagnosis of pericoronal radiolucencies affecting the jaws

Features	Pericoronal or follicular space [1]	Unicystic ameloblastoma [2,3]	Adenomatoid odontogenic tumor [2]	Calcifying odontogenic tumor [2,4,5]	Ameloblastic fibroma [2,6]
Incidence		13-21% of all cases of ameloblastoma	2-7% of all odontogenic tumors	1-7% of all odontogenic tumors	Approximately 2% of odontogenic tumors
Age		3rd decade	2nd decade	2nd – 4th decade	1st 2 decades
Sex		Males = Females	Females > Males	Males = Females	Males > Females
Signs and Symptoms	Asymptomatic	Usually asymptomatic. Large lesions may have painless swelling of the jaws.	Smaller lesions appear as asymptomatic, sessile masses on the gingiva. Larger lesions cause painless expansion of the bone	Asymptomatic, may appear as painless slow growing swelling associated with expansion of cortical bone	Small fibromas are asymptomatic. Larger lesions are associated with swelling of the jaws

Cont... **Differential diagnosis of pericoronal radiolucencies affecting the jaws**

Site		More than 90% in mandibular posterior region.	Anterior portion of jaws. Maxilla > mandible	Majority in incisor and canine region. Maxilla = Mandible	Posterior mandible is the most common site
Radiographic features	Follicle appears as thin homogenous radiolucent halo around the embedded tooth	Circumscribed radiolucency that surrounds the crown of unerupted tooth	Follicular type appears as circumscribed, unilocular radiolucency that involves crown of unerupted tooth.	Appears as unilocular, well-defined radiolucency – 1/3rd of cases are seen in association with unerupted tooth	Smaller lesions appear as unilocular radiolucency which is associated with unerupted tooth in about 75% of cases

Figure1: Orthopantomograph showing with well- defined cystic lesion associated with the impacted molars.

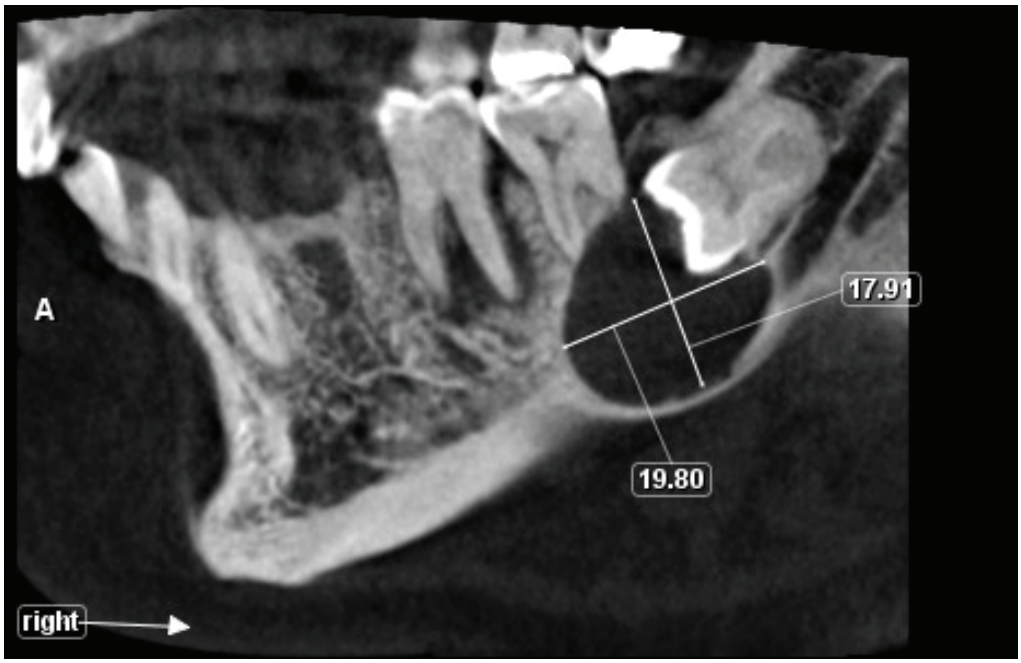

Figure 2: CBCT image shows well- defined cystic lesion associated with the impacted molars

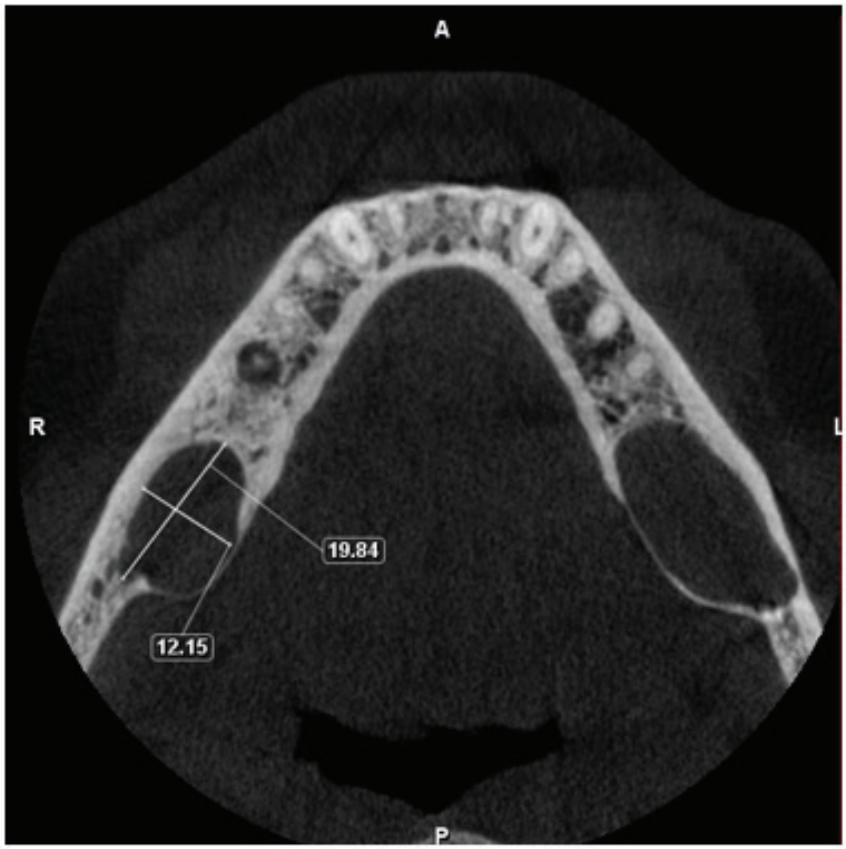

Figure 3: CBCT image showing bucco-lingual expansion of the lesion in the axial section

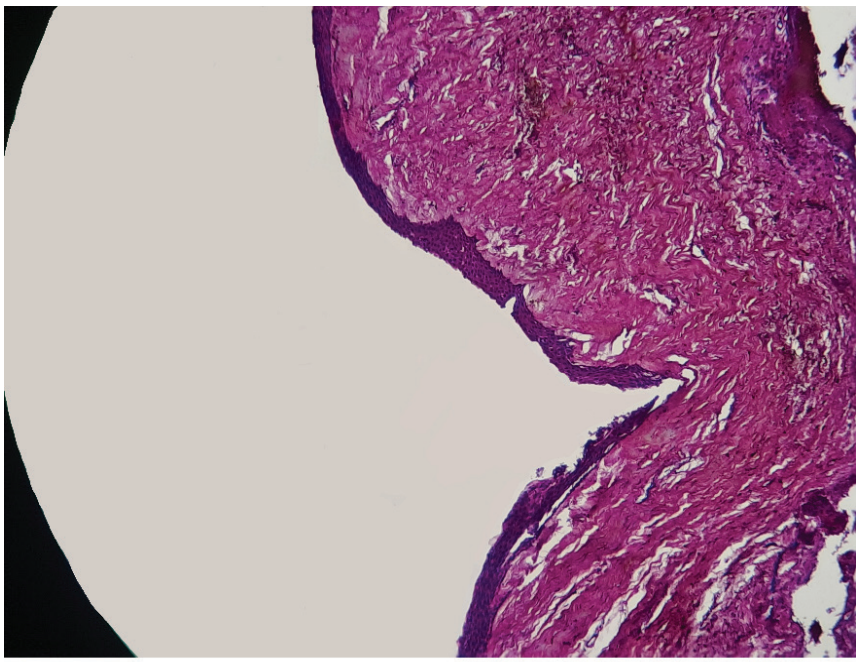

Figure 4: Photomicrograph of lesion showing cystic lumen, epithelial lining and connective tissue (H and E, ×10)

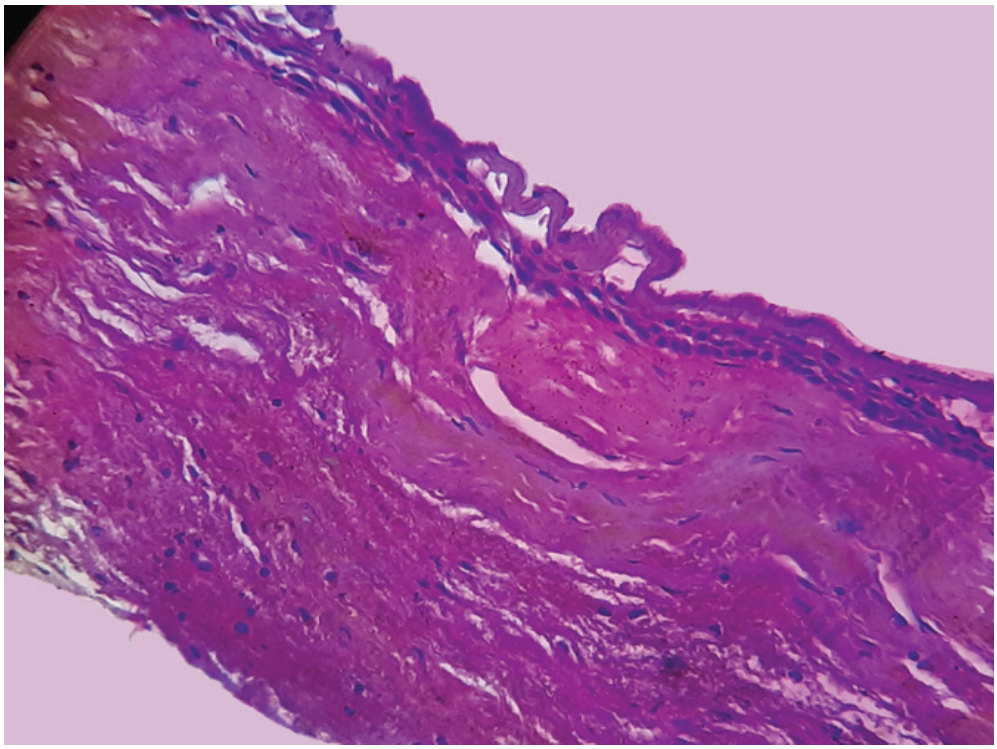

Figure 5: Photo micrograph showing 2-4 cell layer thick epithelium resembling reduced enamel epithelium and connective tissue showing dense bundles of collagen fibers interspersed with fibroblasts (H and E, ×40)

Discussion

Dentigerous cyst is the most common benign odontogenic cyst secondary to periapical cyst. It usually presents with a crown of an impacted or an unerupted permanent tooth and rarely associated with deciduous tooth.[7] Dentigerous cysts is more commonly seen in men aged 20-30 years and is seen associated with the unerupted third molars followed by premolars and canines.[8] The reported prevalence rate is 1.44 in 100 unerupted teeth.[9] Although the pathogenesis remains unclear this cyst is believed to originate from the follicle of an unerupted tooth which causes expansion due to fluid accumulation between the crown and the epithelium.[10]

Benn A and Altini M (1996)[11] proposed three mechanisms for the formation of a dentigerous cyst. a) dentigerous cyst might form a dental follicle and become secondarily inflamed with the source of inflammation being a non-vital tooth b) The second one, formation of a radicular cyst at an apex of a non-vital deciduous tooth followed by eruption of its permanent successor into the radicular cyst resulting in a dentigerous cyst of extrafollicular origin c)The follicle of permanent successor might get secondarily infected from either periapical inflammation of a non-vital predecessor or other source leading to a dentigerous cyst formation.

Dentigerous cyst is usually asymptomatic and discovered on routine radiographic investigation associated with unerupted tooth unless it is secondarily infected. Frequently seen in the posterior mandible when compared to maxilla. It is unilocular with well-defined sclerotic area around the crown and always associated with an impacted tooth. This cyst can cause resorption or displacement of the adjacent tooth and also can cause expansion of the cortical plates. [12]

Dentigerous cysts is usually solitary, but can be seen as multiple or bilateral cysts associated with various syndromes like cleidocranial dysplasia, mucopolysaccharidosis (type VI), Maroteaux--Lamy syndrome and Gorlin--Goltz syndrome. [13]

Treatment

As dentigerous cysts are rarely symptomatic, usually they are diagnosed on routine radiographic investigation due to an expansile swelling causing destruction of

the bone. The choice of treatment of dentigerous cysts depends upon the patient's age, size, location of the cyst, the tooth involved and its proximity to the vital structures.[14] Decompression and marsupialization is the preferred modality of treatment for aesthetic reasons as it is more prevalent in the younger age group.[15] These methods are conservative in nature and prevent fracture of the cortical bone and damage to vital structures. Enucleation is done if the cyst is large followed by the removal of the impacted or embedded tooth.[16] Recurrence rate is very less but it can turn into ameloblastoma, squamous cell carcinoma and mucoepidermoid carcinoma.[2]

Conclusion

Clinical examination together with radiographic and histopathologic investigations are the most important tools that aid in differentiating dentigerous cysts from other cysts and tumors with pericoronal radiolucencies. This case also highlights the need for prophylactic extraction of unerupted teeth to prevent the occurrence of odontogenic cysts and tumours, a majority of which, when they occur in this region are associated with impacted teeth. Management of cysts occurring in jaws are important to prevent recurrence or later turning malignant.

Ethical Clearance: Taken from Institutional Ethics Committee, Manipal College of Dental Sciences, Mangalore *(A constituent institution of MAHE, Manipal)*

Source of Funding: NIL

Conflict of Interest: NIL

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