



Case series: Incidental finding-Dentigerous cyst

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Abstract

Dentigerous cysts are common odontogenic lesions that require accurate diagnosis for effective management. Traditional diagnostic methods rely on histopathology, but radiographic evaluation can provide valuable insights.

Objectives: To present a case series of dentigerous cysts diagnosed solely based on radiographic features using conventional radiography and CBCT, highlighting the diagnostic efficacy of imaging modalities.

Methods: Retrospective analysis of 2 cases of dentigerous cysts diagnosed radiographically. Inclusion criteria: lesions diagnosed using conventional radiography and CBCT, without histopathological confirmation. Radiographic features evaluated: cyst location, size, shape, border definition, and relationship to adjacent structures.

Results: 2 cases of dentigerous cysts were identified, with characteristic radiographic features: like well-defined unilocular radiolucency, corticated border, association with impacted tooth.

Conclusion: Radiographic evaluation using conventional radiography and CBCT can accurately diagnose dentigerous cysts, obviating the need for histopathological confirmation in selected cases. This case series highlights the diagnostic potential of imaging modalities in oral and maxillofacial pathology.

Keywords: Dentigerous cyst, odontogenic lesions, radiographic diagnosis, intra oral periapical radiograph, orthopantomogram, cone beam computed tomography, inferior alveolar nerve canal, impaction

Introduction

Dentists frequently encounter a range of soft tissue and intraosseous pathologies during their assessments and treatments, often identifying them incidentally.

Dentigerous cysts of the oral cavity are odontogenic cysts, attached to the cervical region of an unerupted tooth and enclosing the crown. Their exact aetiology is unknown and may be referred to as a follicular cyst. These cysts are typically developmental in nature, characterized histologically by a wall composed of loose fibrous tissue lined with thin, regular epithelium. They originate from remnants of reduced enamel epithelium surrounding the crown of an unerupted or impacted tooth. These remnants undergo cystic degeneration with fluid accumulation in the central portion of the lesion which is attached at the cemento-enamel junction. Dentigerous cysts are the second most prevalent odontogenic cyst (second only to the periapical cyst) making up approximately 20% of all the epithelial lined cysts of the jaws. The sites of this cyst are the mandibular and maxillary third molar and maxillary cuspid areas, since these are the most commonly impacted teeth ^[1].

Case 1

A 58-year-old male patient presented to the outpatient department of Oral Medicine and Radiology with a chief complaint of dull, persistent pain in the lower right posterior

tooth region for the past two weeks. He had recently received a 10-unit fixed partial denture spanning from the lower right second premolar to the lower left second premolar one month ago. The pain intensifies during chewing on hard or sticky foods. The patient has a history of diabetes and hyperlipidaemia, and has been on medications for these conditions for past few years.

Upon general examination, the patient appeared conscious, cooperative, and well-oriented to space and time. He presented as well-built and well-nourished, with no apparent physical abnormalities, and his vital signs were within normal limits.

During extra-oral examination, no swelling, tenderness, or erythematous changes were observed. The temporomandibular joint (TMJ), lymph nodes, and masticatory muscles showed no abnormalities upon assessment.

Intra-oral inspection and palpation of the affected region revealed no detectable abnormalities.

A radiodiagnosis was made by taking orthopantomogram. The OPG revealed well defined radiolucency circumferentially around the coronal aspect of the impacted lower right third molar at the level of Cemento-enamel Junction (CEJ) suggestive of cystic changes. The long axis of the lower right third molar was seen parallel to the lower border of mandible suggestive of horizontally impacted lower right third molar with dentigerous cyst.

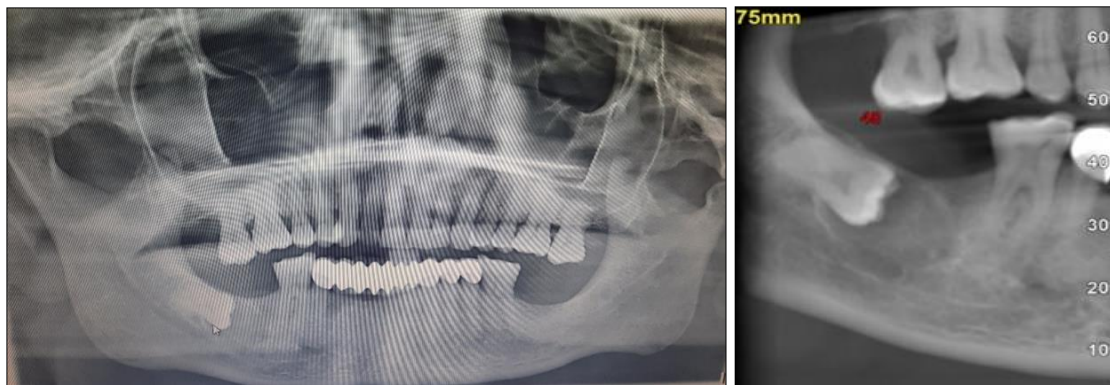


Fig 1: The panoramic view shows the right posterior mandible with an impacted 48 with diffuse extensive odontogenic osteolytic lesion surrounding the crown of the impacted tooth

With the aim of further analysis of the lesion, Patient was advised to take Cone Beam Computed Tomography (CBCT) in relation to horizontally impacted lower right third molar. CBCT was carried out. On evaluation, lower right third molar is fully formed, impacted in an inverted position &

the tooth is covered by thick buccal and thin lingual bones. Mesio distally it is extending 13.1 mm away from the distal root of adjacent first molar to the ascending ramus of the mandible. Superiorly the CEJ is located about 10 mm below the occlusal plane.

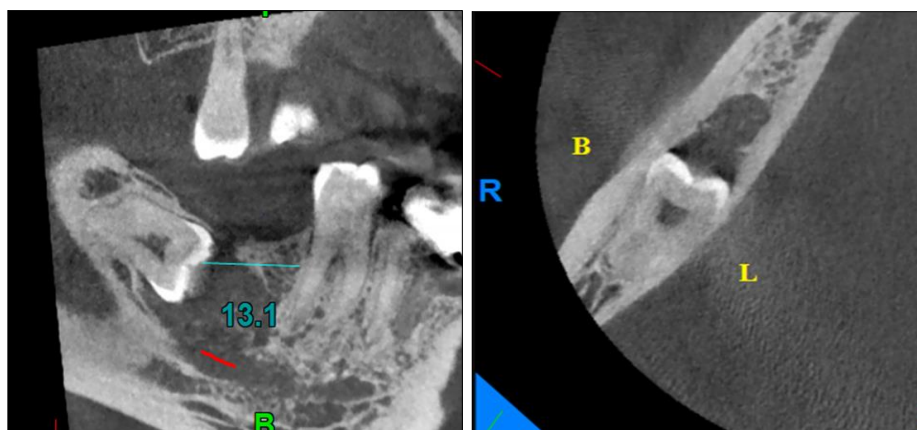


Fig 2

The crown of the impacted right third molar is surrounded by a solitary odontogenic radiolucency. The lesion extends from the crown of the impacted tooth mesially into the alveolar bone of adjacent edentulous region measuring

approximately 11 mm & extends superiorly to the crestal bone to the inferior alveolar nerve canal measuring approximately 16.6mm & buccolingually measuring approximately 5.1 mm.



Fig 3

The lesion appears oval in shape, often with well-defined margins and a curved border. It appears to be completely radiolucent with no evident internal compartments except for the crown of the tooth 48.

The lesion resulted in a slight breach in the superior cortical border of the inferior alveolar nerve canal, thinning of the lingual cortical plate, and discontinuity of the crestal bone. There was no evidence of discontinuity in the buccal or lingual cortical plates.

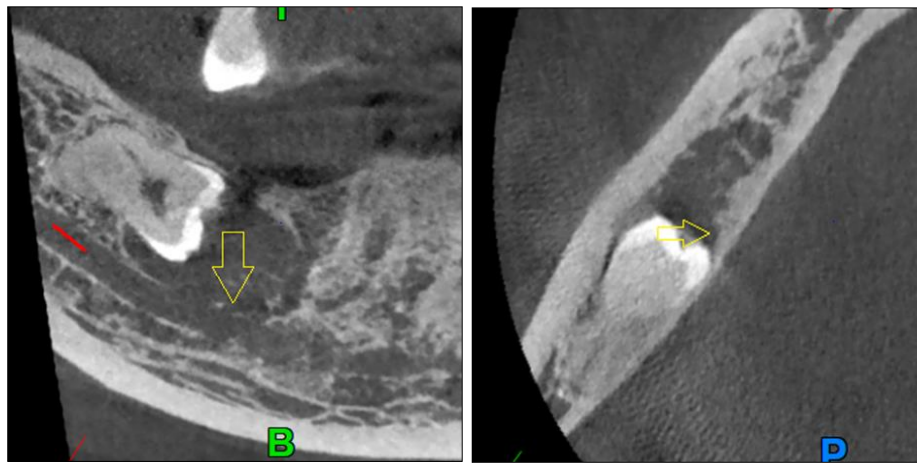


Fig 4

Thus, from all the above findings a radiographic differential diagnosis of dentigerous cyst - 48 was made.

Case 2

A 55-year-old female patient presented at the outpatient department of Oral Medicine and Radiology with a chief complaint of pain in the lower left posterior tooth region since past few days. According to the patient's history, the pain was moderate, intermittent, and aggravated on mastication.

Her medical history indicated long-standing hypertension for which she had been under medication for many years. There were no significant findings in her past dental, family or personal history.

On general examination, the patient was found to be conscious, co-operative and well oriented to space and time. She was well built, well-nourished with no other physical abnormalities and vitals were within the normal limits.

During extra-oral examination, no swelling, tenderness, or signs of erythema were observed. Additionally, there were no abnormalities noted in the temporomandibular joint (TMJ), lymph nodes, or masticatory muscles.

Intra-oral inspection and palpation of the affected region also revealed no abnormalities.

A Radiodiagnosis was made by taking intra oral periapical radiograph and orthopantomogram. Intra Oral Periapical Radiograph (IOPA) revealed the presence of horizontally impacted lower left third molar with the presence of cystic changes.



Fig 5

OPG revealed a well-defined radiolucency located at the lateral aspect of the crown of the impacted third molar.

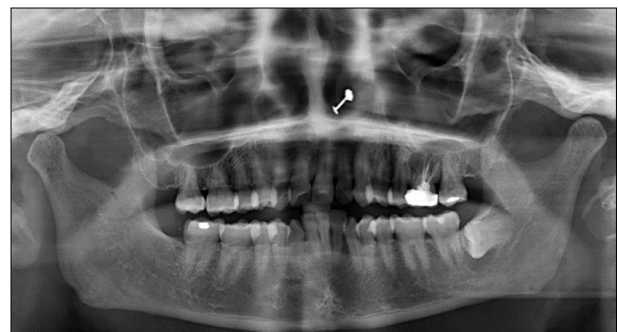


Fig 6: The panoramic view shows the left posterior mandible with an impacted 38 with diffuse extensive odontogenic osteolytic lesion surrounding a part of the crown of impacted tooth

With the aim of further analysis of the lesion a CBCT was taken in relation to horizontally impacted lower left third molar. Upon evaluation, the lower left third molar was found to be fully formed and horizontally impacted, surrounded by thick buccal and thin lingual bone. It extends mesiodistally approximately 3.3 mm away from the distal root of tooth 37 towards the ascending ramus of the mandible.



Fig 7

Mesial cusp is 19.3 mm below the occlusal plane, distal cusp is 7.7 mm below the occlusal plane. Tooth measures 9.2 mm mesiodistally at the CEJ and around 13.8 mm in

length from the occlusal aspect to the radiographic root apex.

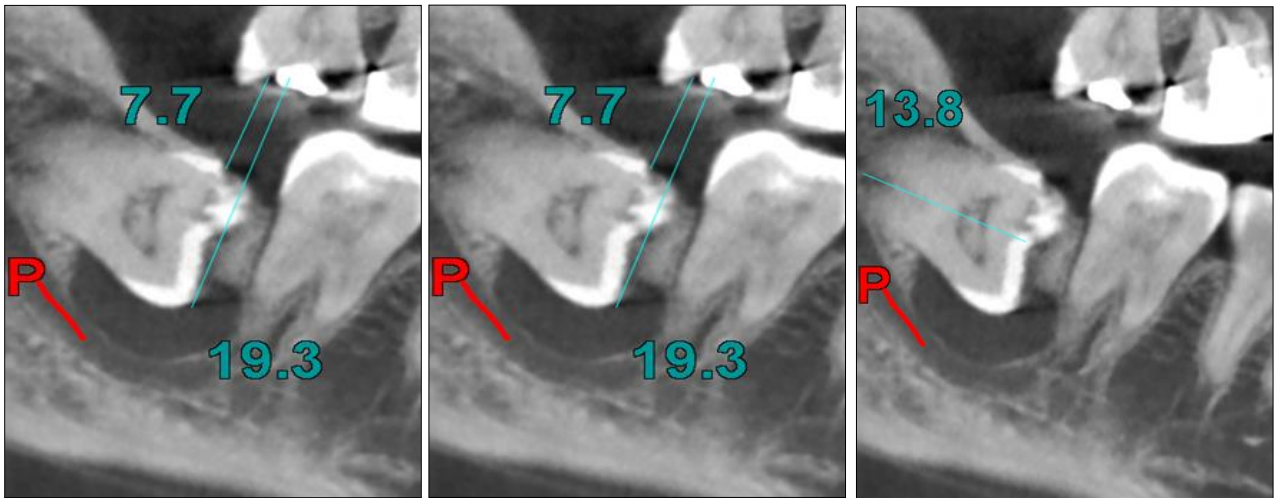


Fig 8

The crown of the impacted tooth is encircled by a solitary odontogenic radiolucency. This lesion extends mesially from the crown of the impacted tooth into the alveolar bone adjacent to the tooth, measuring approximately 4.1 mm. It

extends inferiorly towards the inferior alveolar nerve canal, measuring approximately 4.4 mm, and buccolingually, measuring approximately 7.7 mm.



Fig 9

The lesion is roughly oval in shape. Margins of the lesion are frequently well defined. The lesion appears to be completely radiolucent with no evident internal compartments except for a portion of the crown of the impacted tooth.

The lesion has caused inferior displacement of the superior border of the nerve canal. The Inferior Alveolar Nerve (IAN) canal runs inferiorly (apical) to the crown and roots of the impacted tooth with about 3.7 mm of bony barrier between the tooth and the superior border of the IAN canal. There was no evidence of buccal or lingual cortical discontinuity.

Thus, from all the above findings a radiographic differential diagnosis of dentigerous cyst -38 was made.



Fig 10

Discussion

An impacted tooth's crown is encircled by an odontogenic cyst, which is created when fluid builds up between the enamel surface and the reduced enamel epithelium. The cyst is shaped like a lumen, with the crown inside. It is invariably associated with impacted, embedded, or unerupted teeth^[1, 2]. The most commonly affected teeth include the mandibular and maxillary third molars and maxillary cuspids, making these areas prone to this type of cyst formation^[2].

It is a very common jaw cyst with male predilection, a peak incidence in the second and third decades^[6]. The maxillary canines, maxillary third molars, and mandibular second premolars are other sites that are relatively common^[3]. 2.5-4% of patients with an impacted teeth are prone to develop a dentigerous cyst^[7, 4].

Unerupted deciduous teeth are rarely affected by dentigerous cysts. They are occasionally associated with odontomas and commonly affect individuals aged 10 to 30 years. There is a slight male predilection, and individuals of white ethnicity are more commonly affected than those of black ethnicity^[3].

Usually, completely asymptomatic small dentigerous cysts are discovered incidentally during routine radiographic examinations or when imaging is performed to investigate the cause of a tooth's failure to erupt. Larger dentigerous cysts, however, may cause painless enlargement of the affected bone^[3].

Radiographically, a unilocular radiolucent region associated with the crown of an unerupted tooth is frequently seen in cases of dentigerous cysts. The radiolucency typically exhibits a well-defined border, often with sclerotic margins. However, an infected cyst may display ill-defined borders. Due to the presence of visible bone trabeculae within the radiolucent area, a large dentigerous cyst may resemble a multilocular lesion^[3, 4].

It is highly arbitrary to distinguish between a small dentigerous cyst and an expanded dental follicle or follicular gap, particularly considering that both would have the same histology. While a normal follicular space is 3–4 mm, a dentigerous cyst can be suspected when the space is more than 5 mm^[2].

Three radiological variations:

- a. Central variety, the crown is enveloped symmetrically.
- b. Lateral type of dentigerous cyst is a radiographic appearance, which results from dilatation of the follicle on one aspect of the crown.
- c. Circumferential dentigerous cyst results when the follicle expands in a manner in which the entire tooth appears to be enveloped by cyst^[2].

Although final diagnosis of dentigerous cyst cannot be from radiological features alone, there are specific and non-specific radiological signs. The fact that the cyst lining is always attached to the cemento-enamel junction is one of the peculiar and specific radiological findings. The centre of the cyst is located below or above the crown expect in cases the tooth is oriented laterally. The non-specific radiological features include, well-defined, rounded with sclerotic margin and radioluscent homogenous, unilocular internal appearance of the lesion^[6].

Although asymptomatic, when larger in size it can lead to pathological fracture of jaw^[4] and rare ameloblastic transformation have also been recorded in literatures^[8]. The

cyst may be infected or inflamed and their clinical and histological findings vary^[6]. The treatment of dentigerous cyst is enucleation followed by curettage^[9] and use of local antibiotics is also advocated^[10].

Conclusion

Dentigerous cyst are the second most common type of odontogenic cyst, which is a fluid-filled sac that develops in the jaw. They are formed over the crown of unerupted or partially erupted tooth, usually associated with mandibular third molars or maxillary canines. They are usually asymptomatic and are incidental finding. Dentigerous cyst are usually benign, they can lead to complications, such as infections, if left untreated.

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