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# Dentigerous Cyst Mimicking Radicular Cyst: An Insight Between Clinicians and Radiologist: Case Report

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**ABSTRACT:** Cyst in the jawbones can be categorized into two types, namely odontogenic and non odontogenic cysts. Odontogenic cysts are pathological cavities lined with odontogenic epithelial cells and surrounded by fibrous connective tissue. A 29-years-old male patient came to the Oral and Maxillofacial Surgery Clinic with complaints of swelling in his upper jaw region since 1 month. Physical examination showed bony swelling of labial vestibule in tooth 21 to 23 region. Radiographic images show unilocular radiolucent lesions with clear sclerotic borders. The patient was diagnosed with Odontogenic Cyst. Complete surgical enucleation of the cyst along with attached tooth to bone cavity structure and also removal of adjacent teeth including non vital tooth 22 and embedded tooth 23 was done under general anesthesia. Careful evaluation of the patient based on clinical, radiographic and histopathological examination is needed by the clinician to provide appropriate treatment. Effective collaboration between clinicians and the radiologist is critical to achieving an accurate diagnosis and suitable therapy.

**KEYWORDS:** embedded tooth, odontogenic cyst, surgical enucleation.

## I. INTRODUCTION

Odontogenic cysts are common lesions, predominantly represented by radicular cysts (constituting 60% of all odontogenic cysts), dentigerous cysts (25%), and odontogenic keratocysts (10–20%).[1] A radicular cyst is an inflammatory odontogenic cyst of the jaw, often associated with an endodontic tooth involvement and most frequently seen in the maxillary anterior region.[2,3] Inflammatory processes of the pulp and periodontium stimulates the epithelial rests of Malassez, then the epithelial cell begin to proliferate and develop into a cystic lesion by osmotic pressure.[4] A dentigerous cyst (also known as a follicular cyst), is one that is formed by follicle expansion of an unerupted tooth enclosing its crown. Although noticed in wide age range, most commonly seen in the second and third decades of life, commonly involves the mandibular and maxillary third molar, followed by maxillary canines, mandibular premolars and rarely maxillary premolars. A dentigerous cyst is caused by fluid accumulation between a formed tooth's enamel surface and the reduced enamel epithelium. Most of the dentigerous cyst are asymptomatic unless acute inflammatory exacerbation is present, however mainly noticed during routine radiographic examination.[5,6,7] In this case, radiographic examination revealed well-defined radiolucent area extending superior from the root of a non-vital tooth which is seen in association with embedded tooth. This fenomenon could be the potential differential diagnostic entity, leading to confusion about origin of the cyst between radicular cyst of non vital tooth or dentigerous cyst of embedded tooth.

## II. PURPOSE

This report is to present a case of dentigerous cyst in embedded canine associated with a post endodontic treatment of lateral incisive of the left maxilla, which created a diagnostic dilemma.

## III. CASE REPORT

A twenty-nine years old male patient was refferred to Oral and Maxillofacial Surgery Clinic with a complaint of swelling on the upper gum. On general physical examination, the patient had stable vital signs. Intra oral examination showed swelling in left anterior maxillary region, tender on palpation and hard consistency. There are edentulous area in anterior maxillary and root canal treatment in lateral incisive of the left maxilla (22), no eruption of the upper left maxillary canine (23). Panoramic radiograph showed a unilocular radiolucent cystic lesion in the periapical region of the root of 22 extending to involve the crown of the embedded canine of the left maxilla (23) (Figure 1). Diagnosis Odontogenic Cyst was made to this patient. Surgical enucleation and tooth extraction of 22 and 23 was done (Figure 2 and 3). The gross specimen which consisted of lining of the lesion along with attached tooth was sent to the pathology department (Figure 4). Histopathological examination showed a cystic cavity lined by

squamous epithelium, connective tissue showed fibrous infiltrated with inflammatory cell, predominantly polymorphonuclear and nuclear. These features were suggestive of a Dentigerous Cyst.

During hospitalization, patient was given Intravenous antibiotic Ceftriaxone 1 gram/12 hours and analgesic Metamizole 1 gram/8 hours. Post operatively healing was uneventful. At follow up examination patient's clinical outcome was found to be satisfactory (Figure 5).

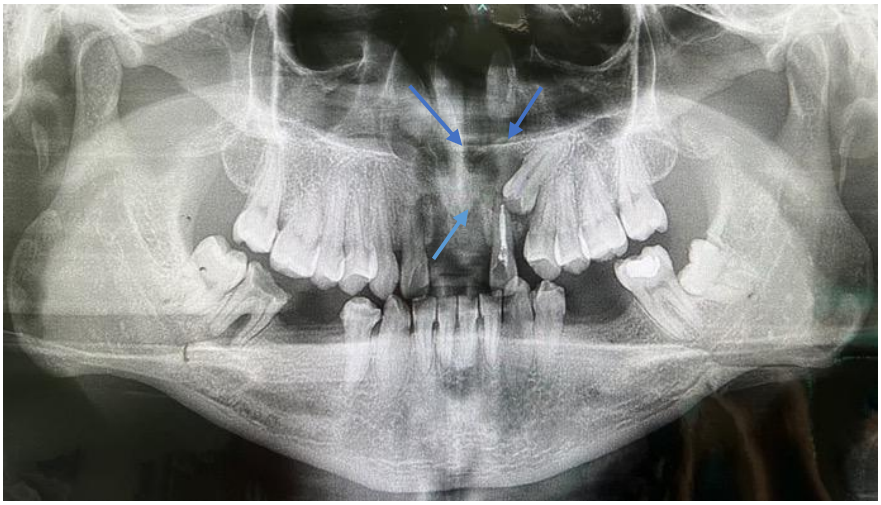
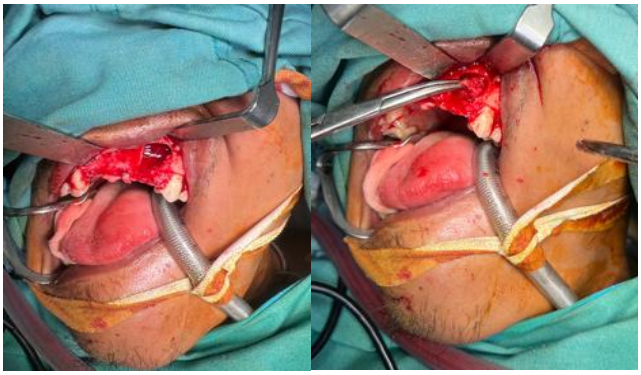


**Figure 1. Orthopantomogram revealed a unilocular radiolucent lesion with well-defined sclerotic margin in relation to post endodontic treatment of 22 extending superior till the embedded canine of the left maxilla (23).**

**Figure 2. The embedded canine of the left maxilla**



**(a)** **(b)**

**Figure 3. (a) Tooth extraction of 22 and 23 followed by enucleation of cystic wall, (b) bone cavity**

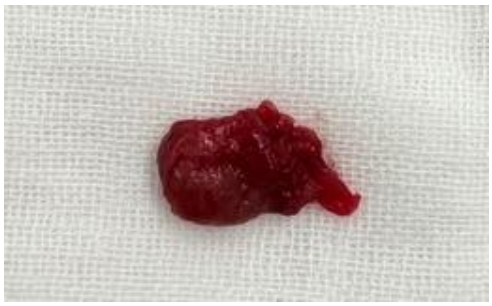


**Figure 4. Macroscopic picture of the soft tissue specimen**

**Figure 5. Clinical appearance 1 week after treatment showed good wound healing**

## IV. CASE DISCUSSION

More than 70% of the patients with radicular cyst associated with necrotic tooth or endodontic treatment.[8] A dentigerous cyst is associated with an impacted or embedded tooth and found in the crown portion of impacted tooth. The radiological analysis for radicular and dentigerous cyst were generally unilocular radiolucency with radiopaque sclerosing margin which was in agreement with findings of most studies.[9,10] These two odontogenic cysts are easily distinguished depending on location on the tooth. Radicular cyst is associated with the apex of the necrotic or non vital tooth. However, they can be ambiguous when they are present in between roots of post endodontic treatment teeth and the crown of impacted teeth. Although enucleation of the cyst is considered for treatment in both cases, additional treatment methods can be performed depending on the type of cyst. If the histopathology reported as a dentigerous cyst, removal of the impacted tooth may be included in the treatment. In radicular cyst, clinician may consider extraction of involved tooth.

Based on radiographic appearance, dentigerous cysts represents as unilocular radiolucent lesion and are classified into three varieties, central type, circumferential type and the lateral type. In the present case, OPG showed well-defined unilocular radiolucency in the periapical regions of tooth 22, which envelop the coronal portion of the impacted teeth 23. But distinguishing whether this radiolucency was associated with tooth 22 or from the impacted teeth 23 was difficult to determine. Radiographically, our case resembles lateral type of dentigerous cyst, where radiolucency was seen covering the neck of the unerupted tooth.

Although most dentigerous cysts are classified as developmental cysts, some cases appear to have an inflammatory origin. According to Benn and Altini's theory, there are mechanisms explaining the development of an inflammatory dentigerous cyst in a permanent tooth related to non vital primary tooth. First, the formation of a dentigerous cyst is caused by inflammation of the periapical tissues from an overlying carious tooth, which stimulates the underlying developing tooth germ, causing fluid accumulation. It means the inflammatory reaction associated with the apex of the carious primary tooth may have stimulated the proliferation of the reduced enamel epithelium of the adjacent developing permanent teeth, leading to cyst formation. Secondly, the crown of a permanent tooth may erupt into a radicular cyst of its deciduous predecessor that is extrafollicular in origin. Thirdly, inflammation from the non vital primary tooth could spread to involve the follicles of unerupted permanent tooth. In the present case, the third mechanism provides valuable insight into the cyst's pathogenesis although inflammation derived from non vital adjacent tooth.[10]

The use of digital radiography technology can assist the diagnosis of odontogenic cysts such as radicular and dentigerous cysts. Digital radiography can obtain more accurate and detailed imaging information, enabling more precise diagnosis. Furthermore, radiography also improved diagnostic accuracy especially for intraosseous lesions in the maxilla by utilizing advanced radiography technology and radiographic analysis, which could help clinicians to make a more accurate diagnoses.[11,12]

## V. CONCLUSIONS

Despite the difficult diagnosis of radicular and dentigerous cyst on the same region, cystic lesions should be examined carefully. Advanced imaging modalities and histopathology remain essential in ambiguous cases. Clinicians, radiologists, and pathologist must collaborate to ensure accurate interpretation and improve their communication skill to establishing a accurate diagnosis and optimizing effective treatment.

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