

Management of an Infected Giant Dentigerous Cyst Associated with Maxillary Third Molar

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Abstract

Dentigerous cysts are the most frequent type of developmental cysts of the jaw and the second most frequent type of odontogenic cysts after radicular cysts. Dentigerous cysts are usually asymptomatic and discovered incidentally during routine radiographic examination. Therefore, they can grow to a massive size before they are diagnosed. In some cases, cysts can become infected and patients refer with pain or swelling like symptoms. The considered definitive treatment for dentigerous cysts is the enucleation of the cyst and the extraction of the associated tooth. The purpose of the current report is to present the treatment of a large infected dentigerous cyst associated with the maxillary third molar. A 71-year-old man referred to our oral and maxillofacial surgery department with a painful swelling in the left maxillary posterior site. Intraoral examination revealed a soft, diffused, cyst like swelling in the gingivobuccal sulcus. Panoramic radiography showed a relatively large, unilateral radiolucency extending from the left canine tooth to the left tuberosity area enveloping the impacted third molar. Cone beam computerized tomography showed a cystic lesion measuring 35 mm horizontally, 27 mm vertically and 30 mm sagittally with the palatal and buccal cortical bone expanded and destructed. The cyst was totally enucleated together with the impacted third molar and the patient recovered without complication.

Keywords: Dentigerous cyst, enucleation, infection, treatment

INTRODUCTION

Dentigerous cysts (DCs) are the most frequent type of developmental jaw cysts and the second most frequent type of odontogenic cysts after radicular cysts.¹ They occur due to fluid accumulation among the reduced enamel epithelium and enamel surface of an impacted tooth,^{1,2} and are form as a result of the follicle separation from around the crown of the impacted tooth.^{1,3} They can occur in a wide range of age groups, mostly in men,^{1,4} and most frequently involve the mandibular third molars, maxillary canine and the maxillary third molars, respectively.^{5,6} DCs are usually asymptomatic and are discovered incidentally during routine radiographic examination. Therefore, they can reach a massive size before they are diagnosed. In some cases, cysts can become infected and patients refer with pain or swelling like symptoms. The considered

definitive treatment of the DCs is the enucleation of the lesion and the extraction of the accompanying tooth.⁷ In some cases, decompression or marsupialization may be required depending on the location and the size of the cyst, the age of the patient, the dentition and the involvement of vital structures.^{7,8} The purpose of the current report is to present the case of the treatment of a giant infected dentigerous cyst associated with the maxillary third molar.

CASE PRESENTATION

A 71-year-old man referred to our oral and maxillofacial surgery department with a painful swelling in the left maxillary posterior site. Intraoral examination revealed a soft, diffused, cyst like swelling in the gingivobuccal sulcus. A panoramic radiography showed a

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relatively large, unilateral radiolucency extending from the left canine tooth to the left tuberosity area enveloping the impacted third molar (Figure 1). The roots of the first premolar and second molar teeth were also involved. A fine needle aspiration was performed and yellow pus fluid was obtained. Cone beam computerized tomography (CBCT) showed a cystic lesion measuring 35 mm horizontally, 27 mm vertically and 30 mm sagittally with the palatal and buccal cortical bone expanded and destructed (Figure 2). The inferior wall of the maxillary sinus was not invaded but displaced superiorly. The patient gave informed consent for surgery and photographs. The full thickness mucoperiosteal flap was raised under general anesthesia. Since the buccal bone was totally perforated, the cyst was easily detected (Figure 3), and totally enucleated together with the impacted third molar (Figure 4). The left maxillary first premolar and second molar teeth were also extracted as they were devital and had no bony support. Microscopic evaluation revealed hyperplastic non-keratinized, stratified squamous epithelium. According to radiographic, clinical and histopathological findings, the lesion was diagnosed as an infected dentigerous cyst related with the impacted maxillary third molar tooth. The patient recovered without complication and remained under follow-up for 12 months. No complaints or complications were observed.

DISCUSSION

Dentigerous cysts account for approximately 14%–20% of all epithelium-lined cysts of the jaws.^{1,9} Although dentigerous cysts can be observed in patients across a wide range of ages, they are detected most commonly in patients between 10 and 30 years of age with a slight male majority.¹⁰ In the present case, the patient was a 71-year-old white man. A dentigerous cyst encircled the crown of an unerupted/impacted tooth by its follicle expansion, and was attached to its neck. It is important that this description be applied with certainty and that the diagnosis of dentigerous cyst is not made uncritically on radiologic findings alone, otherwise other odontogenic cyst and tumors, such as odontogenic keratocyst (OKC) or unilocular ameloblastoma involving neighboring impacted teeth, can be misdiagnosed as dentigerous cysts.^{2,11} In a

previous study,¹² the authors reported on 2646 pericoronal lesions which were mostly follicular tissue (67%) with no evidence of pathology. Of the remaining cases, many were dentigerous cysts (752), and 79 of these showed mucous metaplasia in the epithelial linings. Among the other pathological lesions in this sample were Odontogenic keratocysts (71), odontomas (19), ameloblastomas (13), calcifying odontogenic cysts (6), carcinomas (6), calcifying epithelial odontogenic tumors (4) and odontogenic myxoma (1).

Generally, DCs are detected during routine radiologic examination. However, in some cases, they may be found because of secondary infections.⁵ Such infections may occur in a dentigerous cyst which is associated with a partially impacted tooth or by spreading from a periodontal or periapical lesion that effects the neighboring tooth as reported in the current case. Although the patient presented in this report had symptoms of infection, discovery of the cyst was late in the course of the development of the lesion as it grew to a large size, causing expansion and erosion on the buccal and palatal bone. The lesion could be clearly detected on panoramic radiograph. However, CBCT is more valuable in cases of large cystic lesions which damage the adjacent bony structures as observed in our patient. Furthermore, CBCT was useful for surgical planning.

The DC may be seen unilocular or multilocular, with well-defined radiolucency, enveloping the crown of the unerupted tooth on the radiograph.¹³ The radiolucency appears in the cervix of the associated tooth. DCs seem to have more effect than other jaw cysts in causing root resorption of the adjacent teeth as presented in our case. In a previous study,¹⁴ the authors reported that the dentigerous cyst's ability to cause root resorption may be due to its origin from the dental follicle and the potency of the latter to resorb the deciduous predecessor roots of the teeth whose crowns they surround.

The treatment approaches for dentigerous cysts are based on the age of the patient, the cyst size and site, the relationship of the anatomical structures with the cyst, and the potency for eruption into the occlusion of the unerupted tooth involved.^{5,15} Usually, if the lesion is small,

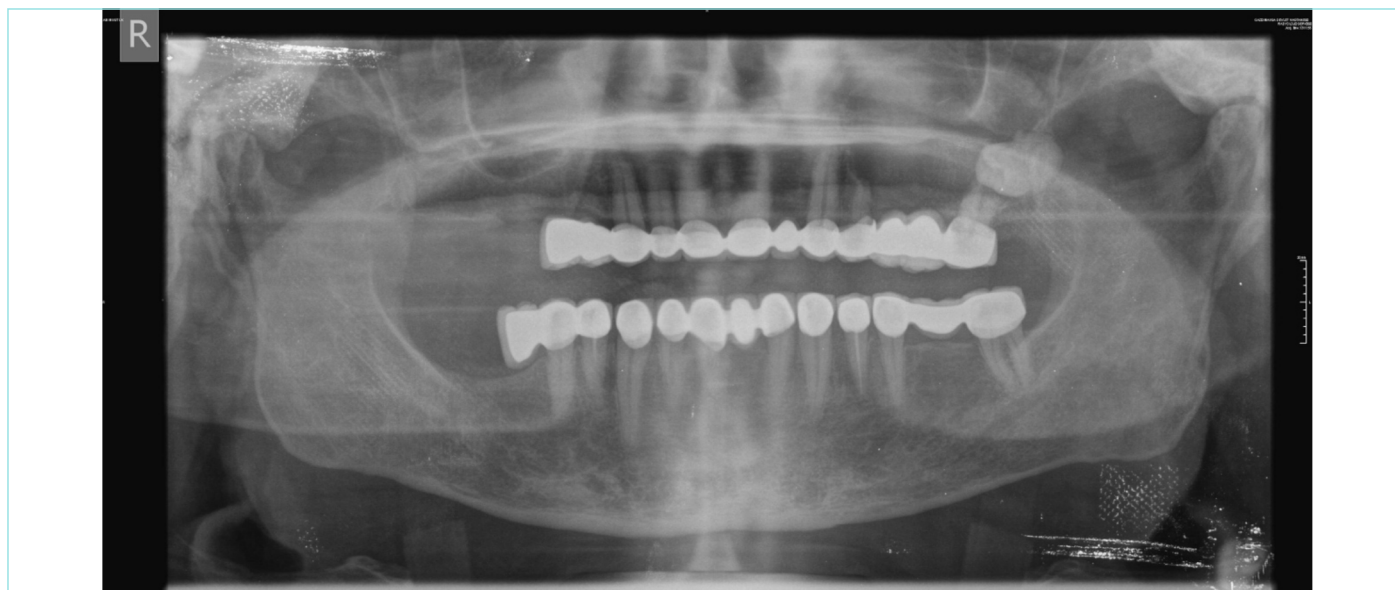


Figure 1. Panoramic radiograph of the lesion.



Figure 2. CBCT images of the lesion.
CBCT: Cone beam computed tomography

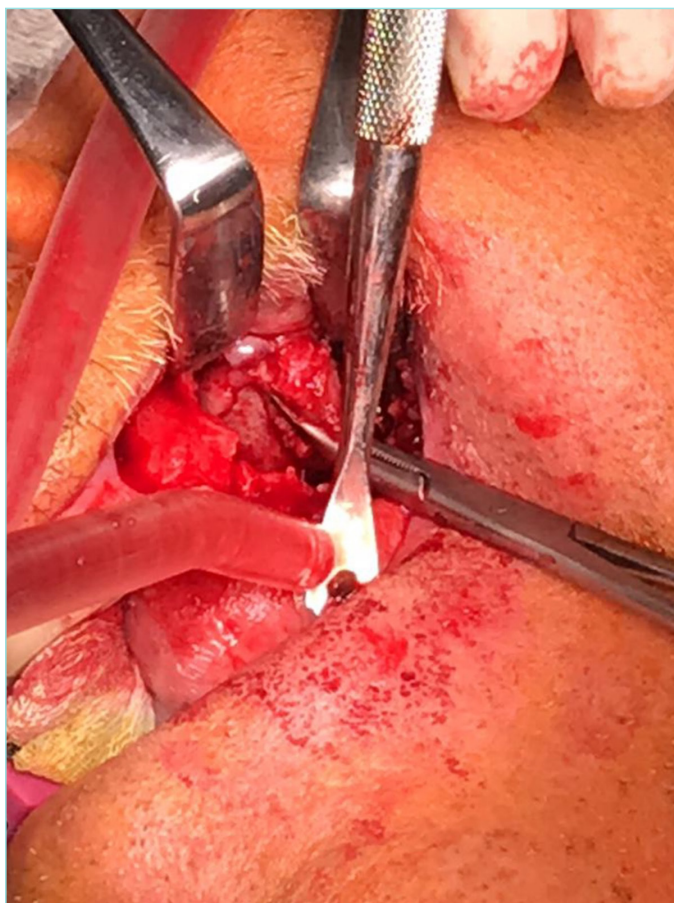


Figure 3. Intraoperative view of the cystic lesion.

enucleation together with the extraction of the associated tooth is the standard treatment for dentigerous cysts to prevent recurrence.^{1,11} However, extensive cysts require marsupialization or decompression to decrease the size of the lesion before enucleation.⁷ Although the lesion in the present case was relatively large, it was not involved with vital structures. Moreover, considering the disadvantages of decompression, such as discomfort for the patient due to the decompression stent, difficult oral hygiene care in the decompression or marsupialization area,



Figure 4. Enucleated cystic lesion.

especially when the dentigerous cyst is in the posterior area, and poor patient cooperation during a prolonged healing time, the immediate enucleation procedure was preferred. Some authors recommend immediate bone grafting following the enucleation procedure to fill the residual cavity.¹⁶ However, in the present case, a grafting procedure was not preferred since the cyst was infected and there was no residual cavity left due to buccal and palatal bone destruction.

In conclusion, an early diagnosis and proper treatment planning for such cases is important to avoid further complications.

MAIN POINTS

- Dentigerous cysts can grow to a massive size before they are diagnosed.
- Dentigerous cysts can become infected and may cause pain or swelling like symptoms.
- The considered definitive treatment of dentigerous cysts is the enucleation of the cyst and the extraction of the associated tooth.

ETHICS

Informed Consent: Informed consent was obtained from the patients.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: A.A., G.S., Design: A.A., G.S., Data Collection and/or Processing: A.A., G.S., Analysis and/or Interpretation: A.A., Literature Serach: A.A., Writing: A.A., Critical Review: A.A.

DISCLOSURES

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