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Clinical Reasoning and Individualized Management of a Large Dentigerous Cyst in an Elderly Patient: A Case Report

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Abstract

A 77-year-old man presented with a four-month history of recurrent pain, swelling, and intermittent discharge associated with a long-standing mandibular fixed prosthesis. Initial periodontal treatment failed to resolve his symptoms. Panoramic radiography revealed a large unilocular radiolucent lesion associated with an impacted tooth, and incisional biopsy confirmed an inflamed dentigerous cyst. Following multidisciplinary assessment and shared decision-making, the cyst was completely enucleated with removal of the impacted tooth under general anesthesia while preserving the functional prosthesis. At one-year follow-up, satisfactory bone regeneration was observed without recurrence. This case highlights the importance of clinical reassessment and individualized treatment planning when persistent symptoms fail to respond to initial therapy, particularly in elderly patients. Given that dentigerous cysts may occur in older adults and can be misdiagnosed clinically as common periodontal conditions, appropriate imaging and histopathological evaluation are essential for accurate diagnosis. Definitive surgical management, guided by the patient's preferences and overall health status, allowed effective treatment of the lesion while preserving existing oral function and the patient's fixed prosthesis.

Categories: Oral Medicine, Dentistry
Keywords: aged, dentigerous cyst, differential diagnosis, odontogenic cysts, patient-centered care

Introduction

Dentigerous cysts are among the most common developmental odontogenic cysts affecting the jaws, accounting for a substantial proportion of odontogenic cysts, and were first described by Paget in 1863 [1,2]. The 2022 World Health Organization (WHO) Classification of Head and Neck Tumors defines the dentigerous cyst as a developmental odontogenic cyst associated with the crown of an unerupted tooth and attached at the cementoenamel junction [3].

Although dentigerous cysts can develop around any impacted tooth, they are most commonly associated with impacted mandibular third molars, followed by maxillary canines, and less frequently, mandibular canines [1,4]. While the risk of dentigerous cyst formation may increase with prolonged tooth impaction, presentation in the seventh and eighth decades of life remains rare [5,6].

Clinically, dentigerous cysts are slow-growing, non-invasive, and usually asymptomatic, and are often detected incidentally during routine radiographic examination or investigation of delayed tooth eruption. Their asymptomatic nature may contribute to delayed diagnosis, particularly in older adults. Late-presenting lesions may exhibit painless cortical expansion, whereas pain, infection, or cortical perforation typically indicates advanced disease or secondary infection. If left untreated, these lesions may result in progressive bone destruction, neurosensory disturbances, tooth displacement, and pathological mandibular fracture [2,4,7,8].

Radiographic evaluation with panoramic radiography or cone-beam computed tomography (CBCT) is essential for diagnosis. Dentigerous cysts typically present as a well-defined unilocular radiolucency surrounding the crown of an impacted tooth. Cyst expansion may displace the associated tooth or alter its orientation [2,7,8]. Needle aspiration may support the provisional diagnosis by confirming the cystic nature of the lesion and characterizing its contents [9], whereas histopathological examination remains essential for definitive diagnosis [1].

Selection of the appropriate treatment approach requires comprehensive clinical and radiological evaluation, as well as consideration of patient- and lesion-related factors such as age, anatomical location, lesion size, and eruption potential of the associated tooth. Marsupialization is primarily recommended in children and adolescents when preservation and eruption of the associated permanent tooth are achievable. In contrast, surgical enucleation with extraction of the associated tooth remains the standard treatment for most adult patients, providing definitive management while allowing comprehensive histopathological

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evaluation. The choice of treatment should therefore be individualized according to the clinical circumstances and anticipated benefits and risks of each approach [10, 11].

Large dentigerous cysts may present diagnostic challenges, particularly in older adults, where symptoms such as pain, swelling, and discharge may mimic periodontal or periapical disease. Extensive lesions may also cause displacement of adjacent teeth and cortical expansion, requiring careful differential diagnosis and individualized treatment planning. In older adults, comorbidities and overall functional status may further influence treatment decisions. Management in this population requires careful clinical reasoning and individualized treatment planning to achieve safe and definitive treatment while preserving function and quality of life [12]. This report presents a dentigerous cyst in a 77-year-old male patient, with emphasis not only on the rarity of the lesion at this age but also on how diagnostic evaluation, multidisciplinary assessment, shared decision-making, and individualized treatment planning guided definitive surgical management while preserving oral function and quality of life.

Written informed consent was obtained from the patient for the publication of this case report and accompanying clinical and radiographic images.

Case Presentation

A 77-year-old male presented to the authors' oral and maxillofacial surgery practice with a four-month history of recurrent pain, swelling, and intermittent purulent discharge involving the anterior mandibular gingiva and labial sulcus. He also reported a sensation of fullness and discomfort beneath a long-standing mandibular fixed prosthesis extending from teeth 43 to 32 (FDI two-digit notation). He sought a second opinion at the author's practice after being evaluated by his general dentist for these symptoms and diagnosed with a presumed gingival abscess attributed to the long-standing fixed prosthesis. An intraoral radiograph had been obtained, but no further clinical or radiographic investigation was performed. Removal of the prosthesis, extraction of the remaining teeth, and fabrication of a complete denture were recommended. The patient declined as he was satisfied with the function of his prosthesis and wished to preserve it.

The patient was a retired widower who lived with his son, who served as his primary caregiver. His medical history included controlled hypertension, type II diabetes mellitus, and a previous ischemic cerebrovascular accident approximately 10 years earlier, without residual neurological deficits. His medications included antihypertensive and oral hypoglycemic agents and daily aspirin.

Extraoral examination was unremarkable, with no facial asymmetry, visible swelling, or palpable cervical lymphadenopathy. The skin showed age-related changes appropriate for the patient's age. Intraoral examination revealed diffuse, firm swelling and expansion of the labial cortical plate extending from the right premolar region to the left premolar region, with tenderness on palpation. The overlying mucosa was intact, with no evidence of active drainage at the time of examination. The long-standing fixed prosthesis spanning the mandibular anterior region was stable despite its age and associated gingival recession.

Panoramic radiography revealed a well-defined, corticated, unilocular radiolucent lesion measuring approximately 5.0 × 3.0 cm, associated with an unerupted tooth and marked expansion of the surrounding cortical bone (Figure *1*). No additional cross-sectional imaging (cone beam CT or conventional CT) was performed before surgery. Aspiration yielded approximately 4 mL of straw-colored fluid with a small amount of blood, supporting the cystic nature of the lesion. An incisional biopsy was subsequently performed, and the histopathological examination revealed a cystic lesion lined by non-keratinized stratified squamous epithelium, supported by a fibrous connective tissue wall exhibiting chronic inflammatory cell infiltration, consistent with an inflamed dentigerous cyst. Following surgical enucleation, the entire excised specimen was submitted for histopathological examination.

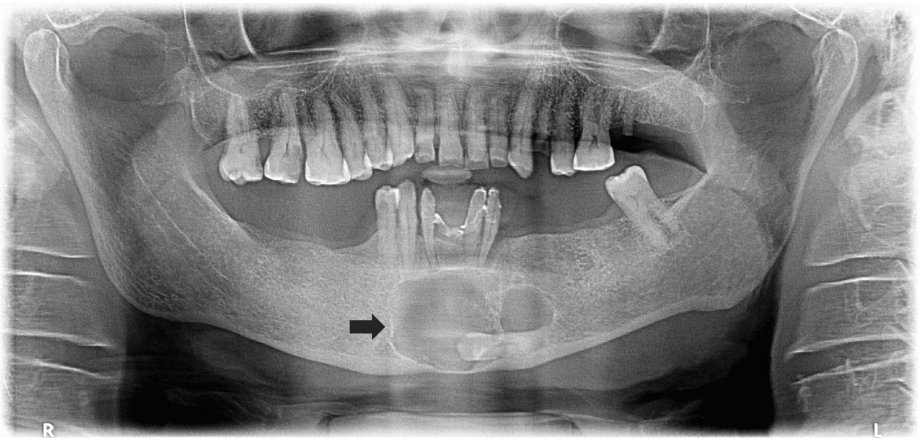


FIGURE 1: Preoperative panoramic radiograph

Preoperative panoramic radiograph showing a large, well-defined unilocular radiolucent lesion associated with a horizontally impacted mandibular canine, with marked displacement of the tooth and expansion of the surrounding cortical bone.

Given the patient's age, lesion size and location, and preference to retain the existing prosthesis, surgical enucleation with removal of the impacted canine was planned. Surgery was performed under general anesthesia. The patient was admitted for preoperative assessment and optimization before surgery. In coordination with the neurologist, aspirin therapy was temporarily discontinued five days before surgery. On the day of surgery, his blood glucose was managed using a sliding-scale insulin regimen. These measures were undertaken as part of the perioperative management to minimize potential complications and ensure the patient's suitability for general anesthesia. The lesion was surgically exposed, revealing marked thinning and expansion of the labial cortical plate (Figure *2a*, *2b*). The cyst was enucleated and the impacted tooth removed (Figure *2c*, *2d*). The cavity was curetted and irrigated, while the existing prosthesis was preserved. No bone graft or other grafting material was used.

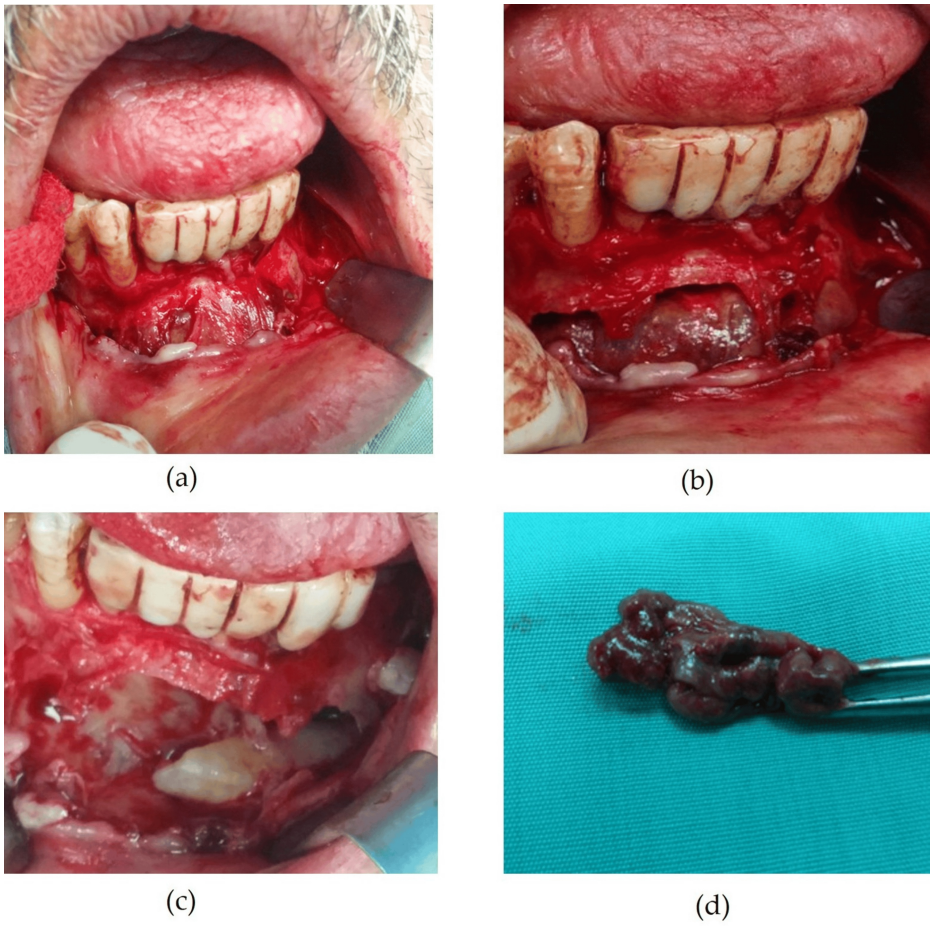


FIGURE 2: Intraoperative findings

Intraoperative findings during surgical management of the dentigerous cyst. (A, B) Elevation of a full-thickness mucoperiosteal flap demonstrating marked expansion and thinning of the labial cortical plate. (C) Dissection of the cystic lesion from the surrounding bone and separation of the cystic lining from the crown of the impacted canine. (D) The excised cystic lesion and impacted canine following surgical removal.

The postoperative course was uneventful, with no neurosensory deficit. Pain and swelling progressively resolved during follow-up. At one year, panoramic radiography demonstrated substantial osseous regeneration of the surgical defect without evidence of recurrence (Figure *3*). The mandibular fixed prosthesis remained functional, and the patient was satisfied with the outcome.



FIGURE 3: Postoperative panoramic radiograph

One-year follow-up showed complete bone healing

Discussion

This case highlights the importance of clinical reasoning and diagnostic reassessment when persistent symptoms do not respond as expected to initial treatment. It also illustrates the importance of individualized treatment planning and shared decision-making in medically complex patients, requiring integration of clinical diagnosis with surgical considerations, functional needs, patient preferences, and perioperative risk.

The first clinical challenge in the present case was recognizing the underlying intraosseous lesion in a patient whose initial presentation was suggestive of a localized periodontal infection. The patient presented with recurrent swelling, pain, and intermittent discharge in an area associated with a long-standing fixed prosthesis. In this clinical context, the initial diagnosis of a gingival abscess was understandable. However, the persistence and recurrence of symptoms despite local periodontal treatment prompted reconsideration of the initial diagnosis and further investigation. The absence of panoramic imaging during the initial assessment limited evaluation of the underlying mandibular structures. Subsequent panoramic radiography (Figure *1*) revealed a well-defined predominantly unilocular radiolucency with an apparent pseudolocular configuration, associated with a horizontally impacted mandibular canine, shifting the diagnostic consideration from a localized periodontal lesion toward an underlying odontogenic cystic or tumor-like lesion. The canine was markedly displaced toward the inferior aspect of the lesion, with its crown oriented medially toward the midline. This configuration suggested substantial lesion-related displacement rather than the more typical appearance of a dentigerous cyst enveloping the crown of the unerupted tooth. The apparent pseudolocular configuration was attributable to a residual vertically oriented buccal bony strut, which was subsequently confirmed intraoperatively (Figure *2c*). The radiographic differential diagnosis included a dentigerous cyst, odontogenic keratocyst, and unicystic ameloblastoma. Aspiration yielded straw-colored fluid with a small amount of blood, supporting the cystic nature of the lesion, while histopathological examination ultimately established the diagnosis of an inflamed dentigerous cyst. Similar diagnostic challenges have been described in odontogenic lesions that initially mimic more common dental conditions, emphasizing the importance of reassessment when the clinical course is inconsistent with the initial diagnosis [13].

Although dentigerous cysts are predominantly diagnosed in younger individuals, cases in older adults have been reported and highlight the need to individualize management according to the patient's clinical circumstances. Nishide et al. described a dentigerous cyst in a 72-year-old man with medical comorbidities who declined surgical treatment and was managed conservatively with irrigation, illustrating how patient preferences and medical considerations may influence the choice of treatment [6]. Rodrigues et al. reported an 87-year-old edentulous woman with a dentigerous cyst associated with an impacted dilacerated tooth that was successfully treated by enucleation [5]. Lung et al. reported a 77-year-old man with multiple dentigerous cysts associated with impacted third molars [14]. Collectively, these reports demonstrate that dentigerous cysts, although less frequently encountered in advanced age, may present with varied clinical circumstances in older adults, in whom treatment decisions should take into account not only the lesion itself but also medical status, functional considerations, and patient preferences.

Once the diagnosis was established, the next clinical decision concerned the choice between definitive enucleation and a more conservative approach such as marsupialization or decompression. Conservative

management is often considered for dentigerous cysts in younger patients, particularly when preservation and subsequent eruption of the associated tooth are desirable [10,11,15]. In the present case, however, the impacted canine offered limited functional benefit given the patient's age and existing dental status. In addition, marsupialization would have required prolonged decompression, repeated dressing changes, and regular follow-up visits, whereas the patient preferred definitive treatment with a shorter treatment course and fewer follow-up visits. After considering these factors, enucleation with removal of the impacted canine was selected to provide definitive treatment while allowing complete histopathological evaluation and avoiding prolonged postoperative management [8,16]. Importantly, the treatment plan also considered the functional and psychological value of the patient's existing fixed prosthesis. Preserving the prosthesis and the remaining lower anterior teeth, despite their compromised condition, was consistent with the patient's expressed preference and allowed maintenance of his existing oral function. This treatment plan therefore reflected a patient-centered approach, balancing the need for definitive treatment with preservation of the patient's existing oral function.

Another important consideration was the choice of anesthesia and perioperative management. Given the extent and location of the lesion and the potential for injury to adjacent anatomical structures or compromise of mandibular integrity, careful surgical access and controlled dissection were required. General anesthesia was therefore selected to provide a controlled operative environment and facilitate safe management of the lesion and any potential intraoperative complications. However, the patient's advanced age and medical comorbidities required careful consideration of the potential perioperative risks associated with general anesthesia. The decision was discussed with the patient, caregiver, and the medical care team, and a comprehensive preoperative assessment was undertaken. Following this assessment, the patient was classified as American Society of Anaesthesiologists (ASA) Physical Status II. The patient was medically optimized before surgery, with multidisciplinary perioperative planning to balance the anticipated surgical requirements against the potential risks of anesthesia. Thus, the choice of general anesthesia was individualized to the patient and reflected the need to balance procedural complexity, medical risk, and the anticipated benefits of definitive surgical management.

Overall, this case highlights the importance of diagnostic vigilance and individualized, patient-centered care in older adults. Persistent or recurrent symptoms that do not respond as expected to initial treatment should prompt reconsideration of the diagnosis and further investigation. In patients with medical comorbidities, integrating clinical findings with functional needs, medical status, and patient preferences is essential for appropriate treatment planning.

Conclusions

This case highlights the importance of clinical reassessment and individualized treatment planning when persistent symptoms fail to respond to initial therapy, particularly in elderly patients. Dentigerous cysts may occasionally mimic common periodontal conditions in older adults, particularly when secondary infection is present. Appropriate imaging and histopathological evaluation are essential for accurate diagnosis. Definitive surgical management, guided by the patient's preferences and overall health status, allowed effective treatment of the lesion while preserving existing oral function and the patient's fixed prosthesis.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Hosam Zebda, Sarah Obeidat

Acquisition, analysis, or interpretation of data: Hosam Zebda, Ali Fahd

Drafting of the manuscript: Hosam Zebda, Ali Fahd, Sarah Obeidat

Critical review of the manuscript for important intellectual content: Hosam Zebda, Ali Fahd, Sarah Obeidat

Supervision: Hosam Zebda, Sarah Obeidat

Disclosures

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