Eur. J. Stomatol. Oral Facial Surg. (2026) 03:02
DOI: https://10.61318/ejsofs.v3i2.48

The European Journal of Stomatology, Oral and Facial Surgery

https://ejsofs.com

Casereport

Article history
Received: 17 September 2025
Accepted: 4 July 2026
Published: 9 October 2026

Keywords:
cystectomy; cysts; decompression, surgical; odontogenic cysts; radicular cyst; surgery, oral

*Author for correspondence. Email: constancamariamlopes@gmail.com

Sequential Approach in the Treatment of Extensive Odontogenic Cysts: From Decompression to Excision, a Case Report

Constança Monteiro Lopes,* Bibiana M. Assunção, José Pedro Barbosa, Carolina Carreiro, Pedro Cabeça Santos, and Mariana Magalhães Maia

Stomatology Department, Unidade Local de Saúde de São João, Porto, Portugal

Abstract

Odontogenic inflammatory cysts are benign lesions that often arise from chronic periapical inflammation. They are asymptomatic and grow without causing immediate symptoms. These cysts can pose diagnostic challenges due to their potential for significant expansion and the need for differentiation from other maxillary lesions. Histological examination remains essential for definitive diagnosis and treatment requires a personalized approach, considering cyst size, tooth involvement and patient compliance. This case report presents the management of an extensive odontogenic inflammatory cyst in a 50-year-old male smoker with a history of ulcerative colitis. The patient presented a small maxillary lesion and an extensive mandibular one, both causing bone deformation, without sensory or infectious symptoms. The patient underwent decompression and biopsy of the mandibular lesion, followed by endodontic treatments and cystectomy. The outcome was favorable with no complications or recurrence. This case highlights the importance of a sequential treatment approach to avoid complications and preserve relevant structures, demonstrating the efficacy of decompression in reducing bone defects and facilitating subsequent surgical interventions.

Highlights

- Decompression followed by cystectomy is a treatment option for extensive mandibular cysts.
- Decompression reduced lesion size and promoted peripheral bone regeneration, potentially limiting the morbidity of subsequent cystectomy.
- Staged treatment may be considered for cysts in close proximity to the inferior alveolar nerve.
- No complications or recurrence were observed at one-year follow-up.
- Patient adherence is a key factor during prolonged decompression.

European Journal of Stomatology, Oral & Facial Surgery

© 2026 The Authors. Published by SPECO-AMEP — Sociedade Portuguesa de Estomatologia e Cirurgia Orofacial – Associação dos Médicos Estomatologistas Portugueses.
This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International licence (CC BY-NC-ND 4.0).

How to cite this article:
Monteiro Lopes C, Assunção BM, Barbosa JP, Carreiro C, Cabeça Santos P & Magalhães Maia M. (2026). Sequential Approach in the Treatment of Extensive Odontogenic Cysts: From Decompression to Excision, a Case Report. The European Journal of Stomatology, Oral and Facial Surgery 03 (02): e48. DOI: https://10.61318/ejsofs.v3i2.48

1. Introduction

Odontogenic inflammatory cysts are benign, epithelium-derived lesions most commonly arising as sequelae of chronic periapical infection and pulpal necrosis.[1, 2] Their pathogenesis is typically linked to the proliferation of epithelial cell rests of Malassez under sustained inflammatory stimuli.[2] These cysts are usually asymptomatic and often discovered incidentally on radiographs, yet they can expand considerably, leading to cortical thinning, root resorption and displacement of adjacent anatomical structures.[1, 2]

Histologically, inflammatory cysts are characterized by a fibrous connective tissue wall lined by non-keratinized stratified squamous epithelium, frequently demonstrating arcading or hyperplastic patterns. The cyst lumen may contain cholesterol clefts, inflammatory infiltrates and foamy macrophages, which reflect the chronic inflammatory process.

Because their clinical and radiographic presentation may overlap with other odontogenic and non-odontogenic lesions, accurate diagnosis requires careful histological examination. The differential diagnosis includes odontogenic keratocysts, dentigerous cysts, periapical granulomas and unicystic ameloblastomas, all of which may mimic inflammatory cysts in early stages.[2, 3]

While treatment of odontogenic cysts is well established, there remains a degree of debate regarding the optimal sequencing of decompression and enucleation in large lesions, particularly in anatomically complex areas where preservation of relevant structures is paramount.[4] This report presents the management of an extensive odontogenic inflammatory cyst using a staged approach, highlighting the role of decompression in facilitating bone regeneration, minimizing surgical morbidity and ensuring safe excision.

2. Case Report

A 50-year-old male, with a medical history of ulcerative colitis and smoking, presented with an asymptomatic swelling of the left mandible and a concomitant hard gingival protrusion in an edentulous area of the second quadrant. Radiographic examination revealed a large radiolucent mandibular lesion, which extended from the anterior border of the left mandibular ramus across the midline to the region of tooth 4.2, involving the roots of teeth 3.3 and 3.4 and displacing the mandibular canal against the cortical bone. A second smaller lesion was identified in the maxilla in an edentulous area of the second quadrant. This lesion appeared radiolucent, very well-defined and of benign characteristics.

Given the size of the mandibular lesion, a biopsy was performed and two decompression tubes were placed: one through the alveolar ridge and another through the vestibular bone fenestration. Size 12Fr pediatric feeding tubes were fixed to adjacent mucosa with 2-0 silk stiches. Histopathological analysis revealed an odontogenic inflammatory cyst (Fig. 1).

During the decompression period, the patient was monitored regularly and was advised to complete endodontic treatment of the involved teeth. During this period, the drainage tube required several repositioning procedures and oral hygiene remained poor.

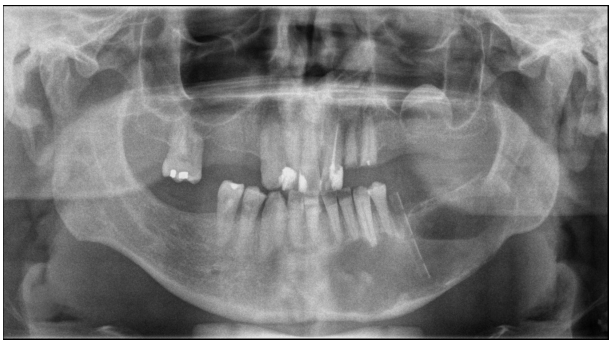

Figure 1. Orthopantomography 1 month after biopsy.

After two years, imaging revealed significant reduction of the lesion and peripheral bone regeneration (Fig. 2). The patient was scheduled for surgery under general anesthesia for cystectomy of both the mandibular and maxillary lesions, along with root extractions, endodontic treatment of teeth 3.3 and 3.4 and apicoectomies with retrograde filling with mineral trioxide aggregate. Histopathological examination confirmed the presence of two inflammatory cysts.

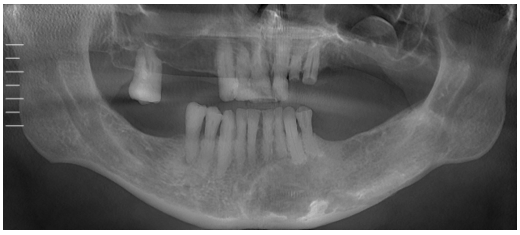

Figure 2. Cone beam computed tomography after two years of decompression (multiplanar cut).

The immediate post-operative period was uneventful and at one-year follow-up the surgical sites showed satisfactory healing with no signs of recurrence (Fig. 3).

3. Discussion

The management of odontogenic inflammatory cysts ranges from simple enucleation to staged protocols involving initial decompression or marsupialization.[4–6] In the present case, decompression proved essential in reducing cystic volume, allowing for safer excision while protecting the inferior alveolar nerve. This is consistent with the literature, which emphasizes decompression as a valuable technique for large mandibular cysts, reducing the risk of pathological fracture and preserving adjacent anatomical structures. Beyond dimensional reduction, decompression can induce histological changes

Figure 3. Post-operative orthopantomography, 1 year after surgery.

such as thickening of the cystic capsule and decreased inflammatory activity, both of which facilitate surgical removal. Similar observations have been reported in previous studies, underscoring the biological benefits of pressure release on cystic epithelium and connective tissue remodeling.[4]

Nevertheless, decompression requires strict patient compliance for long-term success, as highlighted by the challenges in this case (smoking habits, treatment delays and irregular follow-up). In fact, poor patient adherence to this approach led to prolonged treatment and may have aggravated hygiene issues. The choice of technique must be individualized and balance clinical feasibility with patient cooperation and lesion characteristics. Comparatively, some authors advocate for primary enucleation in large cysts to shorten treatment duration; however, this approach carries higher risks of nerve damage, bone loss and recurrence.[6] Our findings support the idea that a tailored, staged management strategy offers a safe alternative, especially when noble structures are at risk.

4. Conclusion

This case illustrates that a sequential approach, combining decompression and delayed enucleation, is an effective strategy for managing extensive odontogenic inflammatory cysts. Decompression not only minimized surgical risks by reducing lesion size and reinforcing bony margins but also facilitated uneventful enucleation while preserving critical anatomy.

The outcome reinforces the value of individualized treatment planning, where lesion size, location and patient factors — such as compliance and systemic health — must guide the therapeutic decision. Ultimately, staged management represents a predictable and conservative option for complex odontogenic cysts, ensuring both functional and structural preservation.

Acknowledgments: No artificial intelligence tool was used in the preparation of this article.

Funding: No funding was received from any public or private entity for the preparation of this manuscript.

Competing Interests: The authors declare that they have no competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Patient Informed Consent

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

References

[1] Sarkar, P.; Junquera, L. Odontogenic cysts. In *StatPearls*; StatPearls Publishing: Treasure Island (FL), 2022.

[2] Neville, B.W.; Damm, D.D.; Allen, C.M.; Chi, A.C. *Oral and maxillofacial pathology*, 4 ed.; Elsevier: St. Louis, 2016.

[3] Shear, M.; Speight, P.M. *Cysts of the oral and maxillofacial regions*, 4 ed.; Blackwell Munksgaard: Oxford, 2007.

[4] Németh, Z.; Kádár, K.; Joób-Fancsaly, Decompression of odontogenic cystic lesions: clinical long-term study of 73 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* **2011**, *111*, 294–303. https://doi.org/10.1016/j.tripleo.2010.09.083.

[5] Tolstunov, L.; Treasure, T. Reduction rate by decompression as a treatment of odontogenic cysts. *Med Oral Patol Oral Cir Bucal* **2017**, *22*, e643–e650. https://doi.org/10.4317/medoral.21916.

[6] Pogrel, M.A. Decompression and marsupialization as a treatment for the odontogenic keratocyst. *Oral Maxillofac Surg Clin North Am* **2003**, *15*, 415–427. https://doi.org/10.1016/S1042-3699(03)00038-4.