

Single-session surgical management of cystic lesions with secondary purulent inflammation

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Abstract

The purpose of this study is to assess the safety and effectiveness of single-session surgery for cystic lesions in the oral and maxillofacial region that are complicated by secondary purulent inflammation.

Methods: A case series of patients with suppurated cystic lesions was carried out. Every patient received a single surgical procedure that included complete debridement, cyst enucleation, and prompt reconstruction with “Sticky Bone” composite and Advanced Platelet-Rich Fibrin (A-PRF). In an ambulatory setting, procedures were carried out under local anesthesia.

Results: Every case with primary healing (per primam) had a full resolution. During follow-up periods of six to eighteen months, no significant complications or recurrences were noted. Bone regeneration and optimal tissue healing were made possible by the incorporation of regenerative materials. **Conclusion:** single-session surgical management is a practical and effective alternative to traditional staged protocols, significantly reducing treatment duration, medical expenses, and patient morbidity while preserving superior clinical outcomes.

Keywords: cystectomy, ambulatory surgery, platelet-rich fibrin, purulent inflammation, radicular cyst, secondary infection, and sticky bone.

Introduction

Radicular cysts are the most common type of jaw cyst, which are common pathological entities in oral and maxillofacial surgical practice (1). Usually, the result of inflammatory processes associated with necrotic dental pulps, these lesions are asymptomatic until they grow significantly or cause secondary complications (2).

A staged approach has historically been the focus of the conventional therapeutic paradigm for infected cystic lesions. This includes initial antibiotic therapy and surgical drainage to control the acute infection, followed by postponed definitive surgical intervention after the inflammatory process has subsided (3,4). Despite its widespread use, this conservative approach has several inherent drawbacks, including lengthy treatment durations, increased patient discomfort from multiple interventions, higher overall healthcare costs, and the potential to contribute to antibiotic resistance through prolonged antibiotic regimens (5).

Pre-operative planning has been transformed by recent developments in diagnostic imaging modalities, especially cone-beam computed tomography (CBCT), which enables precise visualization of lesion extent and anatomical relationships in three dimensions (6). At the same time, surgeons now have powerful biological tools to treat resulting bone defects promptly, thanks to the development of sophisticated regenerative materials, such as bone graft composites and platelet-rich fibrin (PRF) derivatives (7, 8).

The concept of single-session surgical management offers an alternative to conventional staged protocols by demonstrating that both acute infection and underlying cystic pathology can be successfully addressed in a comprehensive intervention through



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precise diagnostic evaluation and meticulous surgical technique (9). This approach aligns with the established surgical principle of “source control” – the prompt and complete elimination of the infectious nidus (10). This case series presents our experience with single-session surgical management of cystic pathologies complicated by secondary purulent inflammation, further supporting this approach’s efficacy and clinical advantages.

Materials and Methods

Patient Selection and Study Design

Patients with symptomatic cystic lesions complicated by secondary purulent infection who presented to our department between January 2022 and December 2023 were included in this case series. Lesion size greater than 1 cm, clinical and radiographic confirmation of purulent inflammation, and patient willingness to undergo single-stage surgical management were among the inclusion criteria.

Exclusion criteria included: immunocompromised status, uncontrolled systemic diseases (e.g., diabetes mellitus), presence of diffuse cellulitis or fascial space infections, and lesions requiring general anesthesia.

Protocol for Diagnostics

Cone-beam computed tomography (CBCT) was used for radiographic evaluation and a thorough clinical examination of every patient. Lesions larger than 1 cm in diameter were classified as radicular cysts, and smaller lesions were classified as periapical granulomas, based on radiographic dimensions (11).

Method of Surgery

Every procedure was performed in accordance with established sterile protocols under local anesthesia. The following were part of the standardized surgical protocol: Administering the proper preoperative antibiotic coverage and administering local anesthesia (articaine with epinephrine 1:100,000) Mucoperiosteal flap elevation; extraction of non-essential teeth when necessary; full cyst enucleation and thorough bony cavity debridement; prompt reconstruction using “Sticky Bone” composite (xenograft combined with A-PRF); placement of the A-PRF membrane over the graft; and primary wound closure using non-resorbable sutures (Figure 3).

Management Following Surgery

The patients were given analgesic medication (ibuprofen 600 mg as needed) and the proper antibiotic therapy (amoxicillin-clavulanate 875/125 mg twice daily for 5 days). At 1, 2, 4, 12, 24, and 52 weeks after surgery, follow-up appointments were planned. At every visit, radiographic and clinical assessments were conducted to gauge the healing process.

Case presentation

A 46-year-old male presented with aesthetic deformity in the mentum region. Clinical examination revealed firm, non-tender mental swelling with an associated cutaneous fistula. CBCT imaging demonstrated a well-circumscribed radiolucent periapical lesion (2.5 × 1.8 cm) associated with mandibular anterior teeth, consistent with a suppurated radicular cyst (Figure 1-2).



Figures 1-2. The patient underwent a single-session cystectomy with combined intra-oral and extra-oral fistulectomy. The osseous defect was grafted with “Sticky Bone” composite and covered with an A-PRF membrane.

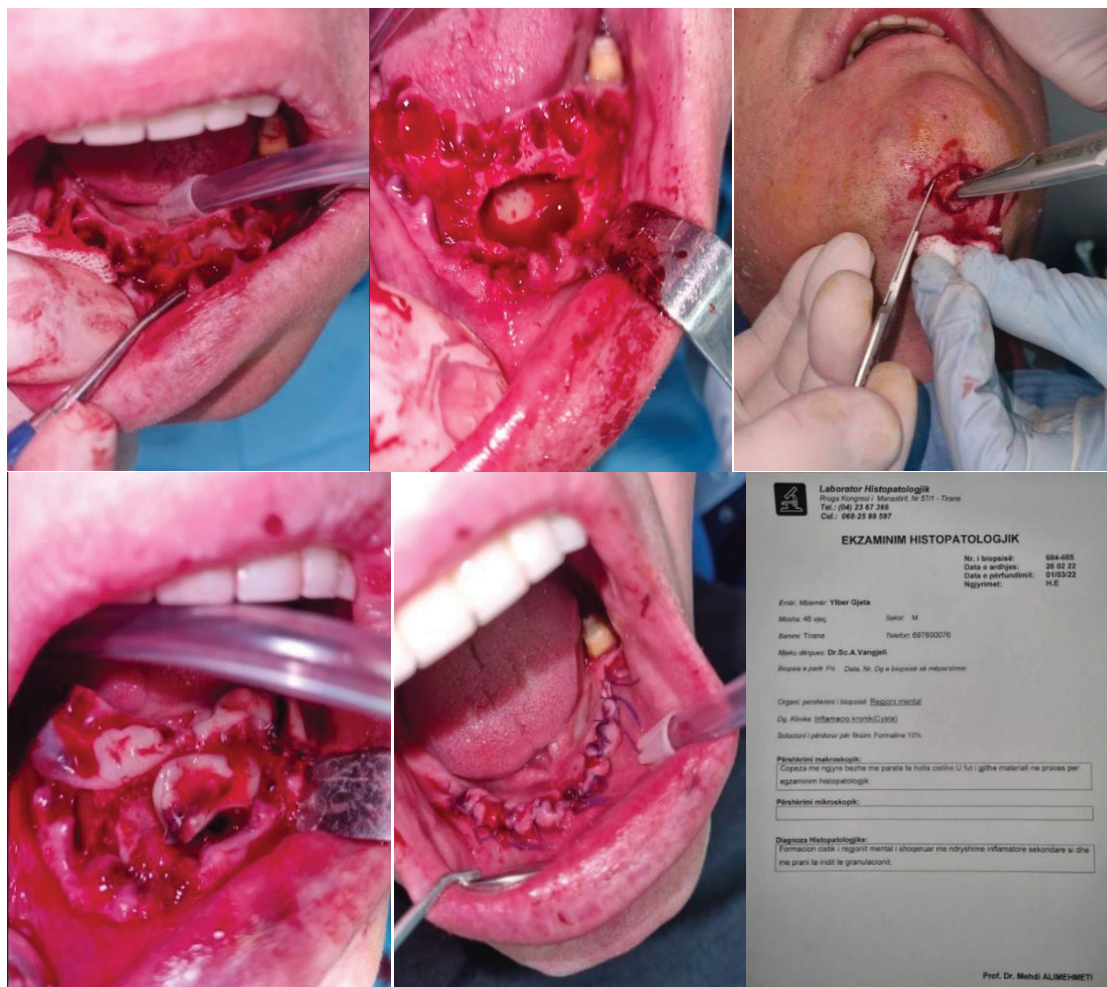


Figure 3. Postoperative recovery was uneventful, with complete fistula resolution and significant aesthetic improvement observed at 2-week follow-up. Histopathological analysis confirmed the diagnosis of radicular cyst.

Discussion

Our results demonstrate that single-session surgical management effectively addresses both infection control and definitive treatment in carefully selected cases of suppurated cystic lesions. These successful outcomes challenge traditional contraindications against definitive surgery in actively infected fields.

The approach's success relies on comprehensive "source control" achieved through simultaneous infection management (via complete drainage and debridement) and etiology elimination (via radical cystectomy) (12). This methodology aligns with contemporary surgical principles, in which prompt eradication of infectious foci is recognized as paramount (13).

Integration of advanced regenerative materials was crucial to our protocol's success. The A-PRF membrane, enriched with growth factors and leukocytes, provided a bioactive barrier that enhanced soft tissue healing while contributing antimicrobial properties (14,15). Simultaneously, the "Sticky Bone" composite ensured optimal graft stability and osteoconduction necessary for predictable osseous regeneration (16).

Our findings are supported by emerging literature. Recent studies have shown that immediate enucleation of extensive jaw cysts, combined with thorough debridement and appropriate antibiotic coverage, does not increase postoperative complication rates compared to delayed approaches (17). Similarly, autologous platelet concentrate application has demonstrated significant benefits in healing outcomes for contaminated surgical sites (18).

The presence of complicating factors such as cutaneous fistulas did not preclude single-session management. Complete excision en bloc, with the cystic sac, ensured the elimination of the entire epithelialized tract, effectively preventing recurrence. This technical aspect underscores the need for a comprehensive surgical strategy that addresses all disease manifestations.

Nevertheless, prudent case selection remains crucial. Absolute contraindications include patients with systemic immunocompromise, uncontrolled metabolic disorders, or clinical signs of spreading fascial space infections. High-resolution CBCT imaging is essential for accurate assessment of lesion extent and bone destruction patterns (19).

Conclusion

For carefully chosen cases of cystic pathologies complicated by secondary purulent inflammation, single-session surgical management is a feasible, effective, and clinically beneficial treatment option. This integrated approach significantly reduces the use of empirical antibiotics, while also limiting therapeutic intervention to a single procedure, minimizing overall tissue trauma, speeding patient recovery, and maximizing the use of healthcare resources.

Accurate diagnosis, surgical skill, careful technique, and suitable case selection are necessary for successful implementation. To confirm these results and establish clear selection criteria, additional prospective studies with larger sample sizes and longer follow-up periods are necessary.

References

1. Neville BW, Damm DD, Allen CM, Chi AC. Oral and Maxillofacial Pathology. 5th ed. St. Louis: Elsevier; 2023.
2. Johnson NR, Gannon OM, Savage NW, Batstone MD. Frequency of odontogenic cysts and tumors: a systematic review. *J Investig Clin Dent*. 2018;9(3):e12344.
3. Borgonovo AE, Rigaldo F, Maiorana C, Re D. Management of large cystic lesions of the jaw: retrospective analysis. *J Oral Maxillofac Surg*. 2023;81(2):145-152.
4. MacDonald-Jankowski DS. Current concepts in odontogenic cyst management. *Dentomaxillofac Radiol*. 2022;51(3):20210234.
5. Ahlawat A, Verma R, Kumar S. Antibiotic stewardship in oral surgery: current perspectives. *J Oral Biol Craniofac Res*. 2023;13(1):12-18.
6. Bornstein MM, Horner K, Jacobs R. Use of cone beam computed tomography in implant dentistry: current concepts. *Periodontol* 2000. 2023;91(1):45-67.
7. Miron RJ, Zucchelli G, Pikos MA, et al. Use of platelet-rich fibrin in regenerative dentistry: a systematic review. *Clin Oral Investig*. 2023;27(4):1257-1270.
8. Simonpieri A, Del Corso M, Sammartino G. Advanced regenerative protocols using platelet-rich fibrin. *Implant Dent*. 2022;31(2):125-134.
9. Chiapasco M, Rossi A, Motta JJ. Single-stage vs staged management of jaw cysts: comparative analysis. *J Oral Maxillofac Surg*. 2023;81(5):623-630.
10. Fernandes M, de Ataíde I. Modern approaches to periapical lesion management. *J Conserv Dent*. 2023;26(2):135-142.
11. Ricucci D, Mannocci F, Ford TR. Periapical lesions: contemporary diagnostic criteria. *Oral Surg Oral Med Oral Pathol Oral Radiol*. 2022;134(3):345-352.
12. Dohan DM, Choukroun J, Diss A, et al. Platelet-rich fibrin (PRF): biological foundations. *Oral Surg Oral Med Oral Pathol Oral Radiol*. 2022;133(2):e45-e52.
13. Del Corso M, Vervelle A, Simonpieri A. Current applications of platelet-rich fibrin in surgery. *Clin Oral Investig*. 2023;27(5):1897-1908.
14. Miron RJ, Fujioka-Kobayashi M, Hernandez M. Injectable platelet-rich fibrin: clinical applications. *Clin Oral Investig*. 2023;27(6):2567-2578.
15. Castro AB, Meschi N, Temmerman A. Regenerative potential of platelet-rich fibrin: evidence update. *J Clin Periodontol*. 2023;50(4):412-425.
16. Ghanaati S, Booms P, Orlowska A. Advanced platelet-rich fibrin in bone regeneration. *J Oral Implantol*. 2023;49(1):15-24.
17. Rossi A, Bianchi S, Di Felice R. Immediate enucleation for jaw cysts: outcomes analysis. *J Oral Maxillofac Surg*. 2023;81(7):845-852.
18. Bianchi S, Rizzo M, Montebugnoli L. Autologous platelet concentrates in infected sites. *Int J Oral Maxillofac Surg*. 2023;52(4):489-496.
19. Tyndall DA, Rathore S. Cone-beam CT applications in oral surgery. *Dentomaxillofac Radiol*. 2023;52(1):20220145.