

Surgical Intervention Of Extraoral Abscess And Enucleation Of Dentigerous Cyst: Case Report

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Abstract

Dental cysts, especially toothpastes, are frequent lesions that affect tissues around unerupted teeth, such as third molars. These cysts, surrounded by a fibrous capsule, can lead to complications such as bone destruction and infections. Early identification is crucial, as dentigerous cysts account for 20% to 40% of odontogenic cyst cases. Third molars often face eruption difficulties due to limited space, increasing the propensity to develop cysts and infections. The objective of this study was to report a clinical case of extraoral abscess associated with a semi-included third molar, describing the process of abscess drainage, tooth extraction and enucleation of the dentigerous cyst, emphasizing the efficacy of the treatment in the resolution of inflammatory symptoms and prevention of recurrences. A male patient, M.C.M., 38 years old, presented to the Faculty of Amazonas (IAES) complaining of severe pain in the left hemiface. Physical examination revealed increased volume, pain, heat, redness, and edema, indicating an abscess. Panoramic radiography showed a carious lesion on tooth 38. Computed tomography confirmed the presence of a dentigerous cyst. The treatment involved extraoral drainage of the abscess and extraction of the semi-included third molar. It is concluded that the treatment was effective in resolving inflammatory symptoms and preventing recurrences, evidencing the importance of early and appropriate interventions in odontogenic infections.

Keywords: Oral Surgery. Odontogenic cysts. Tooth included.

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I. Introduction

Dental cysts are common lesions that can affect various tissues around the teeth. Among the most frequent types, dentigerous cysts stand out for their association with non-erupted or semi-included teeth, especially third molars. They are characterized by a capsule of fibrous tissue that surrounds the crown of an

unerupted tooth, and can lead to significant complications such as bone destruction and infections. The prevalence of dentigerous cysts represents a significant portion of odontogenic cyst cases, ranging from 20% to 40% of diagnoses, and their early identification is crucial for effective treatment (1,2)

Third molars, known as wisdom teeth, often face eruption difficulties due to limited space in the oral cavity. Approximately 30% of third molars are partially or fully included, resulting in a greater propensity for the development of dentigerous cysts and other associated pathologies. The impaction and semi-impaction of these teeth not only hinder eruption, but also contribute to the formation of environments prone to bacterial and inflammatory proliferation, which can lead to the development of cysts and infections (3,4)

In addition to dentigerous cysts, dental abscesses are a common complication associated with tooth retention and dental injury. A tooth abscess is a buildup of pus due to a bacterial infection, which can manifest itself either intraoral or extraoral, depending on the severity and location of the infection. Initial treatment of a tooth abscess typically involves draining pus to relieve pressure and reduce pain, followed by a regimen of antibiotics and anti-inflammatories to control the infection. The efficacy of treatment depends on the adequacy of drainage and subsequent treatment to prevent recurrence (5,6)

The therapeutic approach for dentigerous cysts often includes enucleation, which is the complete surgical removal of the cyst and treatment of the area to prevent recurrence and promote bone regeneration. Enucleation is usually effective in resolving dentigerous cysts and mitigating associated symptoms such as pain and swelling. In addition, tooth extraction of semi-included teeth is often necessary to solve problems related to retention and space, which can reduce the risk of new cyst formation and infections (5,7)

The literature suggests that the combination of treatment for dentigerous cysts and abscesses, including surgical and drug techniques, provides a comprehensive approach to the management of complex dental conditions (8). Tooth extraction, for example, can be performed in conjunction with cyst enucleation to treat both the underlying cause and consequences of pathological processes. In cases of semi-included teeth and dentigerous cysts, the surgical approach should be carefully planned to ensure complete removal of the cyst and preservation of the surrounding bone (9,10).

The importance of clinical and radiographic evaluation for treatment planning cannot be underestimated. The use of modern imaging techniques, such as computed tomography, allows a detailed visualization of the extent of the cysts and the identification of any associated complications (11). This information is essential for the choice of the appropriate therapeutic approach and for the effective execution of the surgery (12).

In addition, the preservation of the remaining tooth structure during treatment is a critical consideration. The minimally invasive approach is preferable, whenever possible, to reduce the impact on adjacent tissues and to promote faster and more efficient recovery (13). The literature highlights that the conservative approach, whenever appropriate, can improve clinical outcomes and patient satisfaction (14).

The combination of drainage, enucleation and extraction techniques, combined with drug treatment, represents an integrated strategy for the management of dental cysts and abscesses. This approach not only treats the present lesions, but also prevents future complications and improves the patient's overall oral health (15,16).

The objective of this study was to report a clinical case of extraoral abscess associated with a semi-included third molar, detailing the process of abscess drainage, tooth extraction and enucleation of the dentigerous cyst, emphasizing the efficacy of the treatment adopted in the resolution of inflammatory signs and symptoms and in the prevention of recurrences.

II. Case Report

Patient M.C.M., male, 38 years old, presented to the specialization clinic in Oral and Maxillofacial Surgery and Traumatology of the Faculty of Amazonas – IAES with a main complaint of intense pain in the region of the left hemiface. During the anamnesis, the patient did not report other associated complaints, and no systemic diseases or the use of medications were mentioned. On examination, an increase in volume was identified in the left hemiface, with evident signs of inflammation, such as pain, heat, redness, and edema. The affected region presented an erythematous color and a fluctuating mass on palpation, indicating the presence of an abscess (Figures 1 and 2).

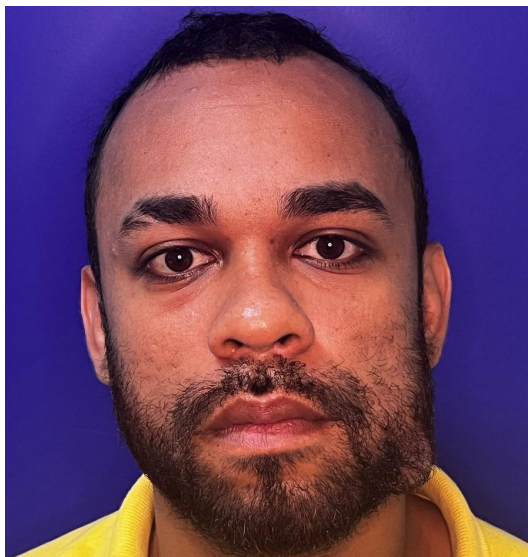


Figure 1 – Initial clinical appearance – front view



Figure 2 – Initial clinical appearance – left lateral view

In addition, a panoramic X-ray was requested and the examination revealed a carious lesion in the dental element 38 (Figure 3). In view of these findings, a computed tomography (CT) scan was requested for a more detailed evaluation. CT showed a hypodense lesion compatible with the characteristics of a dentigerous cyst (Figure 3, 4 A-B, 5, 6 and 7).

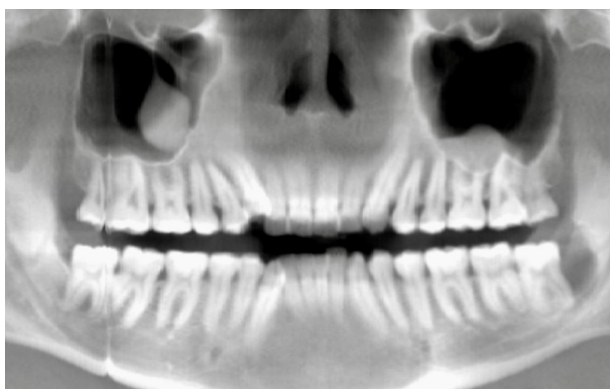


Figure 3 – Initial panoramic radiograph

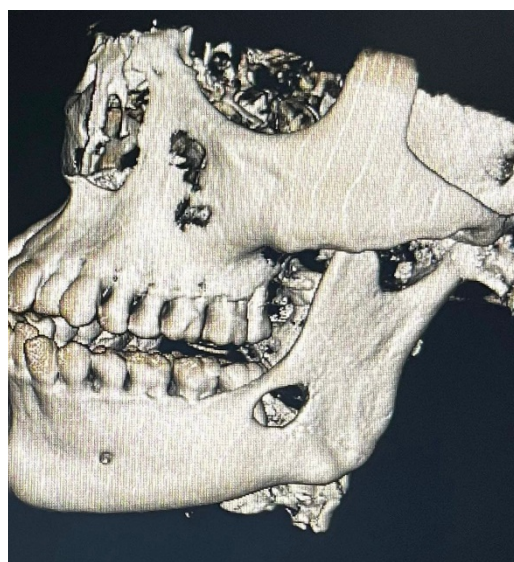
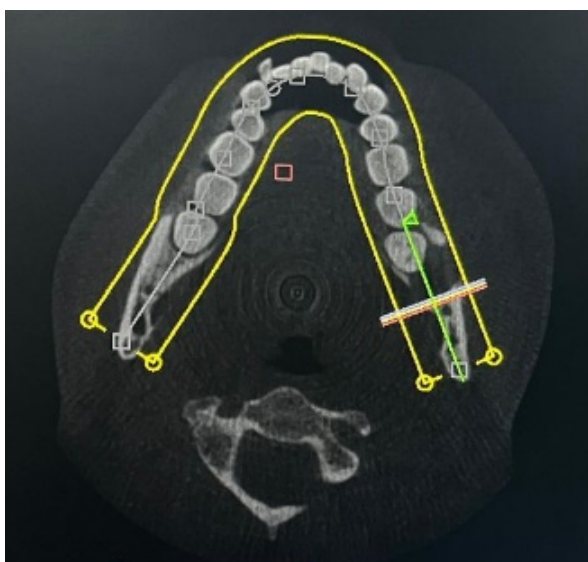


Figure 4 – 3D reconstruction CT slices (A-B)



Figure 5 – CT Slice axial

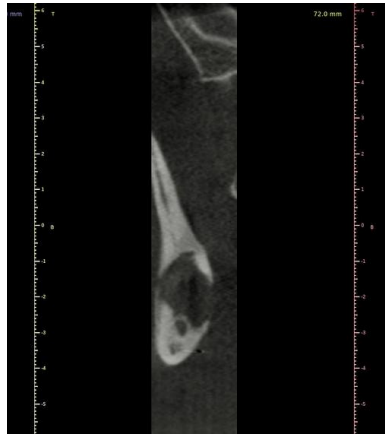


Figure 6 – CT Coronal Slice

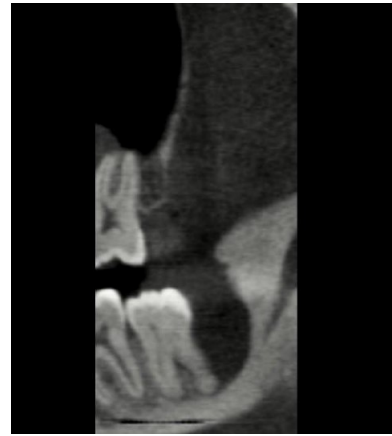


Figure 7 - Approximate overview

Before the beginning of the surgical procedure, the patient signed the Informed Consent Form (ICF) (Appendix A) and the authorization for the use of images (Appendix A). The proposed treatment was drainage of the extraoral abscess and extraction of the semi-included mandibular third molar, element 38.

The surgery was preceded by extraoral antisepsis with a 0.12% chlorhexidine solution, ensuring adequate decontamination of the area to be operated. The patient was properly positioned and the area was carefully disinfected.

It was decided to perform abscess drainage as an initial treatment. Local anesthesia was performed with 4% articaine with 1:100,000 epinephrine vasoconstrictor in the subcutaneous extraoral region around the swelling (Figure 8). The skin was incised at the highest point of the float, following the facial lines (Figure 9).



Figure 8 – Local anesthesia



Figure 9 – Incision

After the skin incision, the subcutaneous tissue was approached and the purulent collection was drained (Figure 10). To this end, a closed hemostatic forceps were introduced, performing divulsion maneuvers from the pockets present inside the tissue to the height of the bone tissue. After this procedure, the site was irrigated with saline solution. A sterile latex drain measuring 10 cm long by 1 cm wide was introduced until it reached the bone part close to the origin of the lesion (Figure 11). Subsequently, it was fixed by simple suture along the edges of the incision, with 4.0 silk thread (Figure 12). A dressing was instituted for the maintenance and protection of the abscess drainage tract (Figure 13).



Figure 10 – Drainage of the purulent collection



Figure 11 – Sterile latex drain



Figure 12 – Suture



Figure 13 – Healing

The patient was instructed to return the next day for a new evaluation. During follow-up, a significant clinical improvement was observed. As part of the treatment, an antibiotic, Amoxicillin 500 mg, was prescribed to be taken every 8 hours for 5 days, and the anti-inflammatory Ibuprofen 600 mg, to be given every 8 hours for 3 days. In the postoperative period, the patient was instructed to keep the operated area clean and dry, avoid hot and hard foods for at least 24 hours, and strictly follow the prescribed medication. Cold compresses were recommended for external application on the face in order to reduce swelling.

After drainage of the abscess and appropriate postoperative management, the patient returned after 7 days, showing a significant improvement in symptoms. With the resolution of the acute phase of the infection, it was possible to proceed with the extraction of the semi-included third molar, tooth 38, which was identified as the causative agent of the infection and enucleation of the dentigerous cyst (Figure 14).



Figure 14 – Intraoral aspect of the semi-included third molar

For tooth extraction 38, rigorous asepsis of the operative field was initiated using 2% chlorhexidine (Riohex Gard®). Subsequently, local anesthesia was performed with 4% articaine associated with epinephrine 1:100,000, infiltrating around tooth 38 and blocking the inferior alveolar, lingual and buccal nerves.

After anesthesia was confirmed, the mucosal incision along the alveolar crest and a distal relaxing incision were initiated, using a scalpel with a 15-blade blade. With a Molt detacher, the mucoperiosteal flap was carefully detached to expose the alveolar bone around tooth 38.

Using a surgical drill at low rotation with abundant saline irrigation, osteotomy was performed, removing the bone around the tooth to facilitate its removal. Then, odontossection was performed, dividing the tooth into portions for a more controlled and less traumatic extraction. With the help of levers and forceps, each fragment of tooth 38 was carefully removed (Figures 15 and 16).

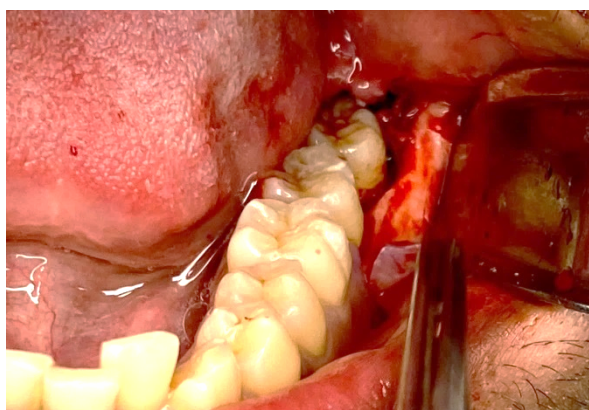


Figure 15 – Tissue detachment

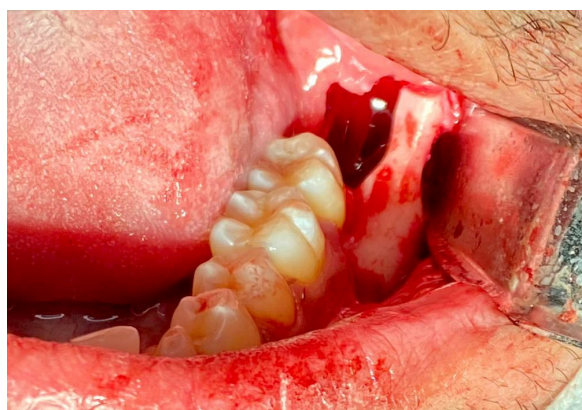


Figure 16 – Removal of the semi-enclosed element

After the extraction of tooth 38, the next step was the enucleation of the dentigerous cyst. Access to the cyst was facilitated by the continuity of the incision made for tooth extraction. With the mucoperiosteal flap still repositioned and fixed, the tissue was carefully opened to expose the cyst capsule. The cystic capsule was then isolated from the adjacent structures using a closed hemostatic forceps for gentle divulsion of the edges, allowing complete visualization and removal of the cyst.

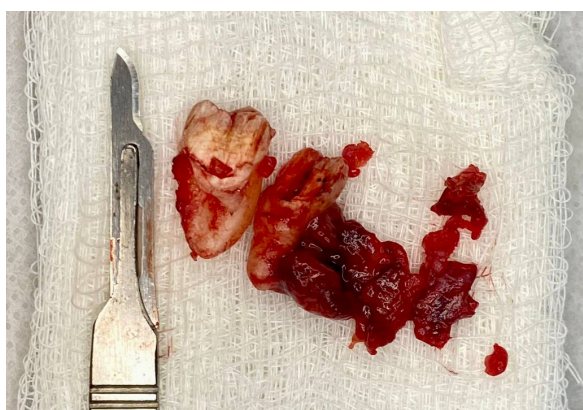


Figure 17 – Tooth 38 removed and dentigerous cyst enucleated

After the cyst was removed, the cavity was thoroughly irrigated with saline solution to ensure thorough cleaning and eliminate any remaining fragments of the cyst. The area was reviewed to ensure that there was no residual pathological tissue.

For hemostasis, sterile gauze with direct pressure was used. After ensuring hemostasis, we repositioned the mucoperiosteal flap and sutured with 4.0 silk thread, using simple interrupted stitches (Figure 18).

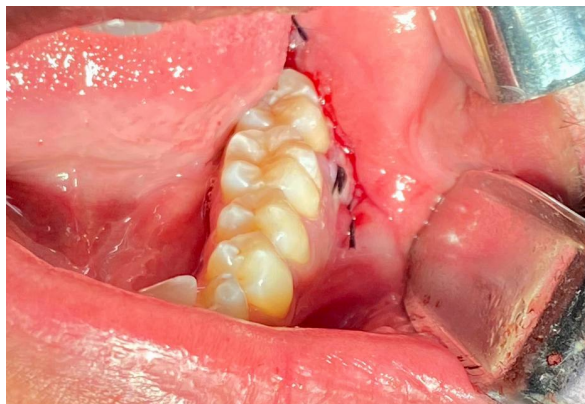


Figure 18 – Surgical synthesis

The patient was prescribed the antibiotic amoxicillin 500 mg, 1 tablet every 8 hours for 5 days, and the anti-inflammatory ibuprofen 600 mg, 1 tablet every 8 hours for 3 days, in addition to detailed postoperative guidance, such as avoiding physical exertion, maintaining adequate oral hygiene, and performing gentle mouthwash with warm water and salt from the second postoperative day onwards.

The patient was scheduled for a follow-up appointment after 7 days, where the sutures were removed and good healing of the treated site was verified. The removal of the semi-included third molar and the previously performed abscess drainage resulted in complete resolution of symptoms, providing a favorable clinical outcome (Figure 19).



Figure 19 – Appearance of the abscess after 7 days.

III. Discussion

Drainage of odontogenic abscesses, especially when it requires extraoral intervention, is a procedure of great importance in dental and surgical practice (17). According to Bali et al. (18) Odontogenic abscesses are common complications of dental infections that can lead to serious health problems if not treated properly. Tormes et al. (19) reinforce this perspective, indicating that timely surgical intervention is crucial to avoid complications such as the spread of the infection to deep fascial spaces. In the present case, extraoral drainage was chosen due to the presence of a floating mass and signs of severe inflammation, corroborating the need for immediate intervention, as discussed in the literature.

Comparative studies have demonstrated the efficacy of extraoral drainage in odontogenic abscesses (20,21). French et al. Vasconcelos et al. (22) reported successful extraoral drainage of submandibular abscesses under local anesthesia, avoiding the risks and costs associated with general anesthesia. On the other hand, Chang et al. Vasconcelos et al.(23) argue that, although intraoral drainage is less invasive, it may be insufficient in cases of extensive infection. In the clinical case presented here, the option for extraoral drainage was justified by the severity of the clinical signs and the need for a more robust intervention to ensure adequate drainage of the abscess.

The literature also addresses the different therapeutic approaches for odontogenic abscesses. Zhang et al. (2019) conducted a systematic review comparing extraoral and intraoral drainage, concluding that the extraoral approach is preferable in cases of extensive infections. so et al. Vasconcelos et al.(24) reported that extraoral drainage, although more invasive, presents better results in terms of complete resolution of the

infection and lower recurrence rate. In the present case, the extraoral approach was chosen due to the extent of the infection and the presence of significant phlogistic signs, in line with the conclusions of these studies.

Clinical signs such as pain, swelling, and fluctuation are crucial for identifying abscesses, as highlighted in the study by Greenstein and Greenstein (25), who report that these symptoms often indicate the need for surgical intervention to prevent complications. Weise et al. Vasconcelos et al.(26) emphasize that immediate surgical intervention with extraoral incision, drainage, and high-volume irrigation is essential for the treatment of severe infections, because it relieves the associated pressure and pain and prevents the spread of infection to adjacent tissues. In the case presented here, the presence of these clinical signs led to the choice of extraoral drainage and extraction of the semi-included third molar. The chosen treatment was effective in resolving the infection and proved to be in accordance with the best practices recommended in the literature.

According to French et al. (27), although extraoral drainage under local anesthesia can avoid risks and costs associated with general anesthesia, it may not significantly reduce postoperative pain. Nusstein et al. Wang et al.(27) confirm that the extraoral approach, although effective, may not present substantial advantages in terms of pain control or reduction of swelling. In contrast, Ardehali et al. Sánchez et al.(28) suggest that, in some cases, intraoral drainage may be preferable, offering better aesthetic results and facilitating postoperative management without compromising the efficacy of the treatment. In this case, the choice of extraoral drainage was guided by the severity of the infection and the need for direct access to the affected area, demonstrating that, despite the aforementioned disadvantages, the approach used was adequate for the effective treatment of the infection and resolution of symptoms.

The advantages and disadvantages of the extraoral approach are widely discussed in the literature. French et al. Wang et al.(22) suggest that, although extraoral drainage is more invasive, it offers a more definitive solution for complex odontogenic abscesses. However, Magalhães et al. Vasconcelos et al.(29) warn of the risk of scarring and other complications associated with more invasive procedures. In the present case, the choice for the extraoral approach was motivated by the need for an effective intervention, with the observation that the patient's recovery occurred without significant complications, demonstrating the efficacy of the technique.

Complications during and after the procedure were managed according to protocols established in the literature. Moura et al. Sánchez et al.(30) indicate that extraoral drainage may be associated with complications such as slow healing and postoperative pain. Magalhães et al. Vasconcelos et al.(29) state that although extraoral drainage is effective, it can be associated with postoperative complications. Postoperative follow-up is important to assess healing and resolution of symptoms, with reassessments after the procedure to ensure the effectiveness of treatment. However, in the case reported here, the adequate management of possible complications and the correct prescription of medications resulted in an effective recovery without serious complications, corroborating the authors on the efficacy of adequate postoperative care.

The main findings of this study highlight the importance of proper management of odontogenic abscesses to avoid serious complications. Silva et al. (33) and Farah et al. Vasconcelos et al.(32) agree that timely surgical interventions are crucial for the resolution of odontogenic infections. This clinical case contributes to clinical practice by demonstrating the efficacy of extraoral drainage and extraction of semi-included third molars in the management of complex abscesses, suggesting that future research should focus on improving techniques and protocols to optimize clinical outcomes.

IV. Conclusion

It is concluded that the treatment of extraoral abscess associated with a semi-included third molar, involving abscess drainage, extraction of the affected tooth and enucleation of the dentigerous cyst, was effective in resolving inflammatory signs and symptoms and preventing recurrences. The surgical approach adopted, together with the appropriate management of the infection through antibiotic therapy, resulted in a significant improvement in the patient's clinical condition, evidencing the importance of early and appropriate intervention in cases of odontogenic infections.

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