



Temporal Cellulitis after Dental Extraction: A Case Report, Our Therapeutic Approach, and a Review of the Literature

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Abstract: Introduction: Temporal odontogenic cellulitis is a rare condition, typically secondary to dental infections, dental extractions, or dental trauma. **Case Report:** A 41-year-old patient with no significant medical history was referred to the emergency department of the maxillofacial surgery service for a painful, fluctuating, soft temporo-jugal swelling with trismus, following a dental abscess associated with a decayed tooth (48). The treatment, guided by imaging, included surgical drainage through a transoral approach, compressive bandaging, and a multi-antibiotic regimen for several days. **Discussion:** This case report highlights the insidious progression of this rare and often overlooked condition. Diagnosis is based on a detailed maxillofacial examination, a CT scan, and/or an MRI to assess the extent of the lesions. Early intervention is crucial, as the condition can threaten life. Management involves surgical drainage of the collection and appropriate antibiotic therapy.

Keywords: Temporal Cellulitis, Dental Caries, Dental Extraction, Drainage.

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INTRODUCTION

Odontogenic temporal cellulitis is a rare acute suppurative inflammation of the temporal region resulting from the spread of bacteria from adjacent spaces, such as the pterygo-mandibular space or the masticatory space [3]. Its etiology is largely dominated by complications from caries of the mandibular or maxillary molar teeth. Therapeutically, temporal cellulitis remains controversial, and there is no consensus on the best approach. We present a case of post-dental extraction temporal cellulitis, illustrating the need for urgent and appropriate management, both clinically, radiologically, and therapeutically. Our goal is, based on this case and the available literature, to present our therapeutic approach.

OBSERVATION

The patient was a 41-year-old with no significant medical history, who presented to the emergency department of the maxillofacial surgery service with an acute right temporal swelling that had been evolving for 10 days, in the context of fever, but with a preserved general condition. The patient reported a dental pain for 15 days, described as a dull and constant pain radiating toward the right temple, along with a progressive limitation in mouth opening, without any signs of dysphagia, dyspnea, or dysphonia.

Four days before admission, the patient had consulted a dentist who performed an extraction of tooth 48 and an intra-oral drainage via a mucosal incision involving the right retromolar trigone. Oral antibiotics, analgesics, and anti-inflammatories were

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prescribed, but there was no improvement. This prompted admission to the emergency department of the maxillofacial surgery service.

Upon examination, the following findings were noted:

- A soft, painful, non-inflammatory, and fluctuating right temporo-jugal swelling.
- Superficial lymphatic areas were free, with no palpable lymphadenopathy.
- Limited mouth opening to 2 cm.
- During the intraoral examination, the following were observed:
 - Poor oral hygiene.
 - Exposure of the alveolar chamber of tooth 48.

A mucosal wound in the region of the right retromolar trigone, consistent with the drainage performed by the dentist, which expressed pus upon

manual pressure on the right temporo-jugal swelling. No vestibular filling was identified. The ostium of Stenson's and Wharton's ducts and the floor of the mouth were free.

A computed tomography (CT) scan showed a hypodense area measuring 21 mm × 17 mm × 80 mm, localized in the temporal region, well-defined, extending into the infratemporal fossa and the ipsilateral masticatory space, with air bubbles within. The lesion showed peripheral enhancement after contrast injection, strongly suggesting temporal cellulitis.

Blood test results revealed elevated leukocytes (18,030/ μ L) and C-reactive protein (97mg/dL).



Figure 1: Frontal view showing temporal swelling in the shape of an hourglass



Figure 2: Lateral view showing temporal swelling



Figure 3: Image showing the dental extraction site and the limitation of mouth opening to 2cm

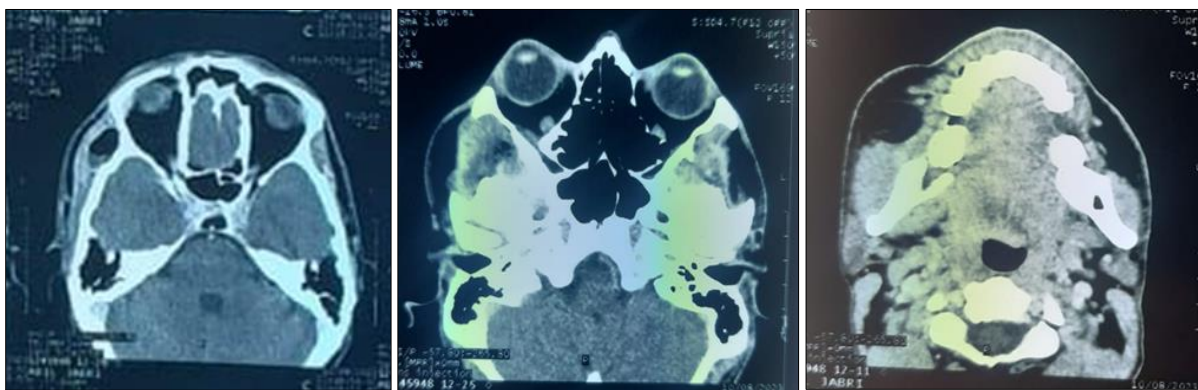


Figure 4: Axial scan demonstrating the extent of the collection in the superficial and deep temporal spaces, the masticatory space, and the right infratemporal fossa

"The patient was hospitalized for supportive therapy and transoral drainage. Intravenous antibiotic therapy combining amoxicillin + clavulanic acid 3g per day and metronidazole 1.5g per day for 7 days, followed by oral therapy for a total duration of 21 days, was administered. This treatment was complemented by level I analgesics, local antiseptics as mouth rinses, ice packs, and steroidal anti-inflammatory drugs for the first three (3) days.

The patient underwent drainage of the collection via a transoral approach under general anesthesia through an incision made at the retromolar trigone. Dissection was performed medially to the coronoid process into the abscess, followed by the placement of a Delbet blade. A compressive bandage was applied, with gradual drainage of the temporal

collection through the intraoral incision. Bi-daily rinses of 250ml with physiological solution and hydrogen peroxide were performed until the pus discharge ceased.

The medical treatment included dual antibiotic therapy with amoxicillin-clavulanic acid (1g every 6 hours) and metronidazole (500mg every 8 hours). The treatment duration was 10 days.

The patient's progress under this protocol was favorable after 5 days, with a reduction in swelling, cessation of purulent discharge, negative CRP, and normalization of the blood count. After one month of follow-up, no signs of recurrence were noted."



Figure 5: Transoral drainage and placement of a Delbet blade



Figure 6: Disappearance of the temporo-jugal swelling

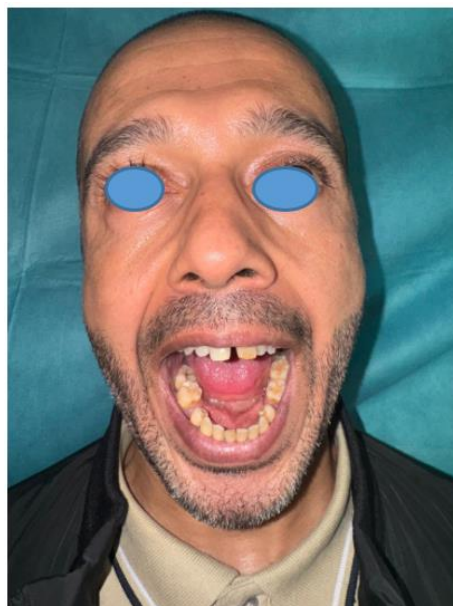


Figure 7: Increase in mouth opening to 4 cm

DISCUSSION

Odontogenic temporal cellulitis is a rare condition, usually secondary to complications from odontogenic infections, dental extractions, or dental trauma [1]. The origin is often a pericoronitis or, as in our case, a complication of caries in the lower wisdom tooth. In this case, the infection spreads toward the external mandibular bone table, behind and outside the affected tooth. The collection follows the lower insertions of the temporal muscle, at the retromolar triangle, and invades the temporal fossa. The first signs are temporal-parietal pain associated with trismus. A "bi-sac" swelling is observed above and below the zygomatic arch [8].

The temporal space comprises two compartments, superficial and deep, separated by the temporal muscle. The superficial compartment is laterally limited by the temporal aponeurosis (the superficial layer of the deep fascia) and medially by the temporal muscle. It contains the temporal fat pad and the temporal branch of the facial nerve. Clinically, an abscess in the superficial compartment is characterized by pain and tenderness in the temporal region. The swelling is located above and below the zygomatic arch, presenting the classic "silent bell" appearance. Trismus may be present [3, 4].

The deep compartment is laterally limited by the deep surface of the temporal muscle and medially by the periosteum covering the temporal bone. It contains branches of the internal maxillary artery and the mandibular division of the trigeminal nerve. Clinically, infection of the deep compartment presents with pain, swelling in the infratemporal region, and the lateral face of the eye, along with trismus due to the proximity of the masticatory muscles. The infection can spread into the infratemporal and pterygomandibular regions [3, 4].

The diagnosis of odontogenic temporal cellulitis is established through clinical presentation, confirmed by imaging. As indicated in the literature, the biological assessment includes the prescription of aerobic-anaerobic blood cultures, particularly in cases of severe sepsis. Bacteriological samples are taken intraoperatively at the time of drainage of the cellulitis. The complete blood count, which shows neutrophilic leukocytosis, is primarily used for monitoring, as is C-reactive protein (CRP). The rest of the blood tests (e.g., electrolyte levels) are mainly aimed at verifying the patient's operability in case of surgical intervention or for monitoring potential decompensation of a systemic pathology.

Radiological assessment, in addition to the classic panoramic radiograph, includes contrast-enhanced CT. While the panoramic radiograph does

not diagnose cellulitis, it helps identify its odontogenic origin. In our case, it was requested by the dentist before the dental extraction. A contrast-enhanced CT is the optimal examination for diagnosing cellulitis, allowing visualization of the collection size and its impact on neighboring anatomical structures, such as the Upper Aerodigestive Tract (UADT) at the mandible, as well as the sinus cavity and the orbital floor in the maxilla [8]. Magnetic resonance imaging (MRI) is a useful complement if there is suspicion of involvement of the floor of the mouth, osteitis, intracranial or spinal complications, or if dental metal artifacts hinder CT exploration. Ultrasound, a readily available and non-invasive imaging technique, is useful for assessing the stage of cellulitis, differentiating acute serous cellulitis from abscess formation, and could aid in surgical decision-making. However, its performance is limited in exploring the deep facial spaces [8]. In our case, given the clinical context, contrast-enhanced CT was the preferred method of exploration.

The treatment of buccodental cellulitis and its complications is twofold, involving both surgical and medical management. In our case, we opted for intravenous antibiotic therapy, combining amoxicillin + clavulanic acid (3g per day) and metronidazole (1.5g every 3 days), adjusted according to the results of bacteriological testing, for a total duration of 21 days. As indicated in the literature, we also initiated level I analgesics, local antiseptics in mouth rinses, ice packs, and steroidal anti-inflammatory drugs during the first few days.

Several therapeutic approaches are reported in the literature. One approach involves external drainage of the superficial and/or deep compartments. In this case, a 3cm skin incision is made outside the external canthus, above the zygomatic arch, being careful not to damage the temporal branches of the facial nerve that run through the superficial temporal fat pad, deep to the orbicularis muscle, just outside the orbital rim. Alternatively, a supraciliary incision can be used. Deep compartment drainage involves placement of a drain through the temporal muscle into the space between the temporal muscle and the temporal/sphenoid bone. Another approach is transoral drainage. The temporal muscle attaches to the coronoid process of the mandible. The key anatomical landmark for intraoral drainage is the vertical branch of the mandible as it ascends from the retro-molar trigone. To drain the superficial compartment, an incision is made in the mucosa vertically along the ramus of the mandible, with lateral dissection to the coronoid process into the abscess. To drain the deep compartment, the incision

is made along the mucosa of the ramus, with medial dissection to the coronoid process into the abscess. A combined approach can also be used [4].

Some authors perform intraoral incisions at the second and third molar level in the buccal groove if trismus is not severe, followed by medial dissection relative to the coronoid process from above. In cases of severe trismus, drainage is performed externally via a skin incision above the zygomatic arch at the junction of the frontal and temporal processes of the zygoma, followed by dissection downward. Both compartments communicate with each other [3].

More recently, Caiwang Chang has described the use of a conventional mini-invasive negative pressure drainage tube placed between the mandibular notch and the inferior middle edge of the zygomatic arch, along the lateral pterygoid muscle to the infratemporal fossa, with another tube placed in the pterygomandibular space [1]. There are also double-cavity drainage tubes with integrated and continuous irrigation, which can effectively shorten treatment duration and reduce patient discomfort.

Surgical drainage is urgent and should be combined with bactericidal antibiotic therapy [2]. With appropriate treatment, the clinical course is typically favorable within one week, with the resolution of symptoms. Recurrence is rare [7]. The most common sequelae of masticatory space cellulitis is retractive myositis of the temporal muscle, leading to temporomandibular osteoarthritis.

CONCLUSION

It is highly likely that a diagnostic error could occur. This requires a thorough dental and medical history, along with a comprehensive maxillofacial, systemic, and radiological examination. We report a case of temporal space abscess following the extraction of a mandibular molar. Trismus is a classic

presentation. A contrast-enhanced CT scan is indicated. A good anatomical understanding of the facial spaces is crucial for urgent and appropriate management.

Conflict Interest: None.

REFERENCES

1. Caiwang, C. (2023). Use of Through-and-Through Irrigation with Mini-Invasive Negative Pressure Drainage to Manage Infratemporal Fossa Abscesses. *Medicine*, 102, 18.
2. Péron, J. M., & Mangez, J. F. (2002). Cellulitis and Fistulas of Dental Origin. *Stomatology and Dentistry. Encycl Med Chir* (Paris, France), 22-033-A-10-14.
3. Fiscoletti, D., & Sorli, A. (2007). Timeless Physical Space and Introduction to the Theory of Everything. *Sci Inq*, 8, 65–80.
4. Johan, F., & Jean, M. (2016). Surgical Drainage of Neck Abscesses and Cellulitis. *French College of Otorhinolaryngology and Head and Neck Surgery and the French Society of Otorhinolaryngology*.
5. Hudson, J. W. (1993). Osteomyelitis of the jaws: a 50-year perspective. *J Oral Maxillofac Surg*, 51, 1294–301.
6. Koorbusch, G. F., Fotos, P., & Goll, K. T. (1992). Retrospective assessment of osteomyelitis: etiology, demographics, risk factors, and management in 35 cases. *Oral surgery, oral medicine, oral pathology*, 74(2), 149-154.
7. Suei, Y., Taguchi, A., & Tanimoto, K. (2005). Diagnosis and classification of mandibular osteomyelitis. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*, 100(2), 207-214.
8. Lazare, A. T. (2021). Predictive Factors for the Risk of Spread of Cervicofacial Cellulitis: Retrospective Study of 80 Cases. *Surgery*. ffdumas-03650570.