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CASE REPORT

Combined temporal and infratemporal fossa abscess following tooth extraction: Case report and literature review

Diş çekimi sonrası gelişen kombine temporal ve infratemporal fossa apsesi: Olgu sunumu ve literatür incelemesi

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ABSTRACT

Infratemporal fossa abscesses following tooth extraction are rare but potentially serious odontogenic infections. They result from the spread of microorganisms from periapical lesions or iatrogenic causes into deep fascial spaces. Due to the complex anatomy and proximity to vital neurovascular structures, diagnosis can be challenging, with symptoms such as trismus, facial swelling, and pain. Contrast-enhanced CT or MRI is essential for assessing the extent of infection and differential diagnosis. Early surgical drainage combined with broad-spectrum antibiotic therapy plays a crucial role in preventing severe complications such as cavernous sinus thrombosis or intracranial spread. Secondly, intensive mechanotherapy helps improve mouth opening and reduces the future risk of limited mouth opening. This article presents a case of infratemporal fossa abscess following tooth extraction and discusses current diagnostic and therapeutic approaches in light of the literature.

Keywords: Temporal fossa, Infratemporal fossa, Odontogenic infection, Tooth extraction, complication

ÖZET

Diş çekimi sonrası gelişen infratemporal fossa apseleri, nadir görülen ancak potansiyel olarak ciddi odontojenik enfeksiyonlardır. Bu apseler, periapikal lezyonlardan veya iatrojenik nedenlerden kaynaklanan mikroorganizmaların derin fasiyal aralıklara yayılması sonucu oluşur. Karmaşık anatomik yapı ve hayati nörovasküler yapılara yakınlık nedeniyle tanı zor olabilir; trismus, yüzde şişlik ve ağrı gibi semptomlarla kendini gösterebilir. Enfeksiyonun yayılımını değerlendirmek ve ayrıntılı tanı yapmak için kontrastlı BT veya MRG görüntüleme gereklidir. Erken cerrahi drenaj ile geniş spektrumlu antibiyotik tedavisinin kombinasyonu, kavernoöz sinüs trombozu veya intrakraniyal yayılım gibi ciddi komplikasyonları önlemede hayati rol oynar. Ayrıca, yoğun mekanoterapi ağız açıklığını artırmaya yardımcı olur ve gelecekte sınırlı ağız açıklığı riskini azaltır. Bu makalede, diş çekimi sonrası gelişen bir infratemporal fossa apsesi olgusu sunulmakta ve güncel tanı ve tedavi yaklaşımları literatür ışığında tartışılmaktadır.

Anahtar Kelimeler: Temporal fossa, İnfratemporal fossa, Odontojenik enfeksiyon, Diş çekimi, Komplikasyon

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INTRODUCTION

Odontogenic infections, originating either from the normal oral microbiota or from invasive pathogens, constitute a major category of infectious diseases globally.^{1,2} Odontogenic infections, which are the leading cause of deep neck infections in adults, can spread along fascial planes and often require a multidisciplinary approach for effective treatment and management.³ The spread of odontogenic infections into facial spaces is largely determined by the anatomical location of the affected tooth roots. A careful differential diagnosis in this area should include possible infections following trauma and hematoma formation and its purulent inflammation or close differential diagnosis with possible tumor formation within this area as well as skin infections like a furuncle. Quite commonly, the infections originating from maxillary canine and molar teeth may extend into the canine fossa, buccal space, superficial fascial planes, or infratemporal fossa, whereas mandibular tooth infections can progress to the sublingual, submandibular, and submental spaces. Specifically, the position of the tooth root in relation to the mylohyoid muscle attachment dictates the subsequent spread of infection and determines which mandibular fascial space will be involved. The infratemporal fossa is bordered superiorly by the infratemporal surface of the greater wing of the sphenoid bone, anteriorly by the posterior surface of the maxilla, medially by the lateral pterygoid plate, laterally by the ramus of the mandible, and posteriorly by the styloid process and the mastoid part of the temporal bone.⁴ The temporal fossa is bordered superiorly by the superior temporal line, inferiorly by the infratemporal crest, and laterally by the zygomatic arch.⁵ The infratemporal fossa accommodates several vital structures, including the medial and lateral pterygoid muscles, the maxillary artery, the pterygoid venous plexus, and the branches of the mandibular division of the trigeminal nerve (V3). In contrast, the temporal fossa primarily contains the temporalis muscle, along with the superficial temporal artery and the auriculotemporal nerve. The pterygoid venous plexus located within the infratemporal fossa is of particular clinical importance due to its venous communication with the cavernous sinus, as infections originating in this region can propagate intracranially and result in cavernous sinus thrombosis.⁶ Management typically involves incision, drainage, and elimination of the source of infection, combined with an appropriate antibiotic regimen. The incision may be performed via extraoral, intraoral, or, in some cases, a combined approach.⁴ Only a limited number of cases involving

concurrent temporal and infratemporal fossa abscesses have been reported in the literature, and mortality data are not well established. In some cases long-lasting inflammation as well as patients general comorbidities can affect this occurrence of atypical odontogenic abscesses.⁷ The present report describes a rare case of a combined infratemporal and temporal fossa (Combined ITF) abscess occurring secondary to the extraction of a maxillary third molar. In this rare case, other potential pathologies were excluded based on the patient's clinical course, comprehensive diagnostic evaluations, and advanced radiological imaging. While similar abscesses reported in the literature are generally associated with non-sterile posterior superior alveolar nerve block injections or primary odontogenic infections, in this instance, the etiologic source was identified as a secondary socket infection that developed following the extraction of tooth number 18. Postoperative ITF abscesses differ from similar cases reported in the literature by their requirement for both intraoral and extraoral drainage, necessitating repeated surgical interventions for adequate management, and advanced therapeutic measures such as prolonged trismus treatment. This report aims to present a rare case of combined infratemporal and temporal fossa abscess following tooth extraction and to review the relevant literature.

CASE REPORT

A 47-year-old female patient presented to our clinic with complaints of pain, trismus, swelling, and erythema in the right temporal region following the extraction of her right maxillary third molar (tooth number 18) performed at an external dental clinic two weeks earlier. Shortly after the procedure, the patient developed localized pain, which was initially attributed to routine post-extraction socket discomfort, and was prescribed amoxicillin-clavulanate (Augmentin®) by the referring dentist. Subsequently, thiocolchicoside (Muscoflex®) and intramuscular diclofenac sodium (Dicloron®) were added to the therapeutic regimen in response to the development of trismus; however, no clinical improvement was observed. Within a week, progressive pain, diffuse edema, erythema, and local hyperthermia developed in the right temporal region, and the patient was referred to the oral and maxillofacial surgery clinic due to the lack of response to medical treatment. The patient had a medical history of type 2 diabetes mellitus, for which she was receiving oral antidiabetic therapy. On clinical examination, the maximum interincisal mouth opening was



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measured at 12 mm. Extraoral evaluation revealed non-fluctuant swelling in the right temporal region, localized hyperthermia, and severe tenderness on palpation (Figure 1a,1b). On intraoral examination, an open, infected, and erythematous extraction socket was identified at the site of the right maxillary third molar. Radiological assessment

revealed no significant pathological findings on the panoramic radiograph (Figure 2a). However, cone-beam computed tomography (CBCT) demonstrated a hypodense area in the right infratemporal fossa consistent with abscess formation, along with increased mucosal density in the right maxillary sinus (Figure 2b). Preoperative magnetic resonance imaging



Figure 1a,b: Extraoral evaluation reveals non-fluctuant swelling in the right temporal region, localized hyperthermia, and severe tenderness on palpation.

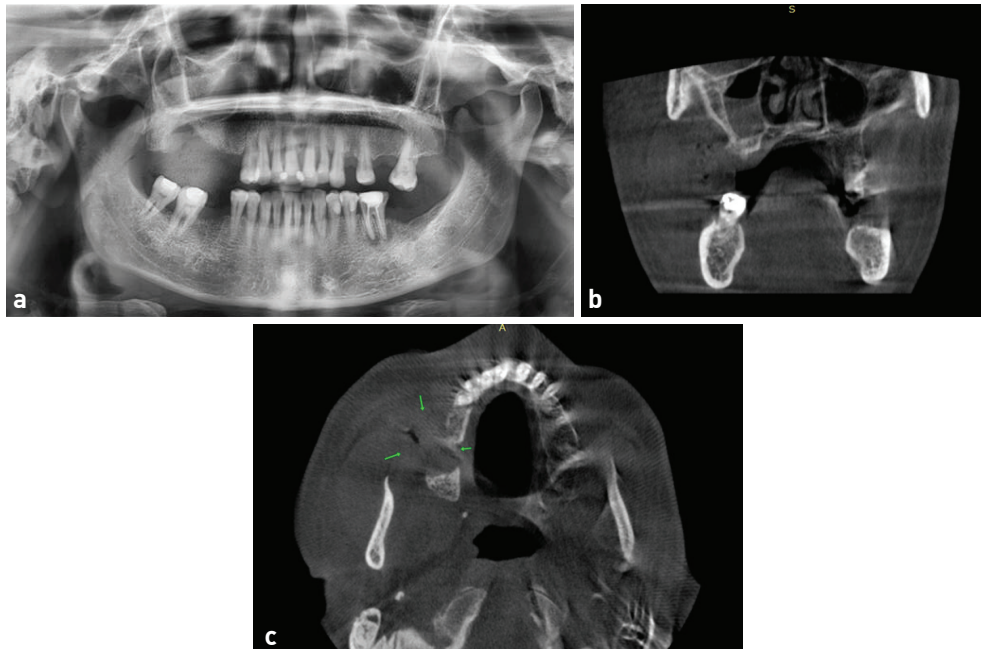


Figure 2a: Orthopantomograph **2b, c:** A hypodense area in the right infratemporal fossa consistent with abscess formation, accompanied by increased mucosal density in the right maxillary sinus, is demonstrated on CBCT imaging.



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(MRI) revealed increased signal intensity within the temporal muscle, with findings consistent with inflammatory changes and compatible with abscess formation (Figure 3a). Coronal short inversion recovery (STIR) sequence demonstrated mucosal thickening and fluid signal intensity within the right maxillary sinus, accompanied by diffuse hyperintense changes extending into the right temporal and infratemporal regions, compatible with abscess formation beneath the temporal fascia (Figure 3b). Preoperative laboratory analysis revealed markedly elevated white blood cell count ($15.46 \times 10^9/L$), C-reactive protein (217.84 mg/L), and immature granulocyte percentage (78.8%), consistent with systemic infection. The patient was admitted to the hospital with a presumptive diagnosis of a right ITF abscess based on clinical, radiological, and laboratory evaluations. Preoperatively, intravenous therapy

with ampicillin-sulbactam (Sulcid® 1 g, 2×1) was initiated two days prior to surgery. The patient was informed about the operation, and an informed consent form was obtained before the procedure. Subsequently, both intraoral and extraoral drainage were performed under general anesthesia. A temporal skin incision of approximately 1 cm was planned parallel to the skin tension lines, along the lower border of the zygomatic arch, posterior to the orbital process of the zygomatic bone (Figure 4). Through this access, a hemostat was introduced to break down loculations and facilitate thorough drainage of the abscess. An intraoral incision was made in the vestibular sulcus over the anterior aspect of the mandibular ramus, and a blunt instrument (hemostat) was carefully advanced posteriorly to reach the infratemporal fossa. Two drains were placed, one through the intraoral approach and the other through the extraoral incision, and both were removed after 72 hours. Intravenous antibiotic therapy was continued for five days postoperatively, and analgesics and an antiseptic mouth rinse were additionally prescribed. Clinical findings demonstrated progressive improvement during the postoperative period, and systemic inflammatory markers returned to normal levels (Figure 5a, 5b). However, the patient experienced marked and persistent trismus lasting for three months, and functional recovery was not achieved. During this period, a muscle relaxant (thiocolchicoside) and physical therapy, including jaw-opening exercises, were recommended. The maximum interincisal opening (MIO) measured 20 mm at 1 month, 26 mm at 3 months, and 30 mm at 10 months postoperatively. Postoperative follow-up examinations revealed no recurrence of infection, with gradual improvement of trismus (Figure 6a, 6b). The patient was referred for further dental management and remains under clinical follow-up. This case presents the importance of sufficient dental treatment during teeth removal and the necessity for improved oral hygiene and dental status when scheduled for such procedure, especially in diabetic patients or those immunocompromised. Secondly the following case shows how early intensive mechanotherapy might decrease LMO (limited mouth opening) and help to prevent the necessity for a secondary procedure, namely a coronoidectomy to improve patient's mouth opening.



Figures 4: Intraoperative view demonstrating the connection of intraoral and extraoral drains, performed to ensure continuous drainage and effective clearance of the deep abscess compartments. The projection of skin tension lines can also be observed in the figure.



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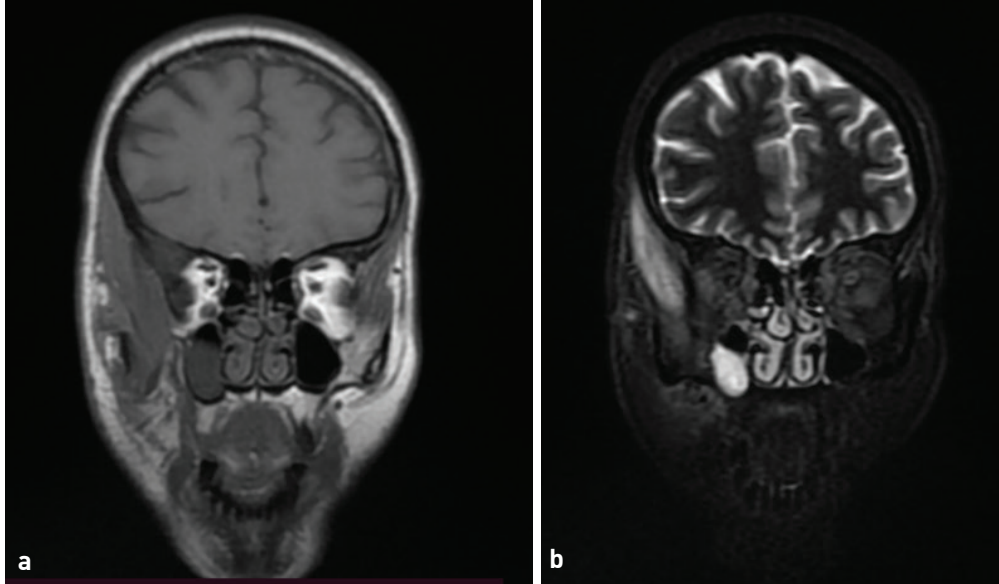


Figure 3a,b: Pre-operative MRI scan (coronal cut) demonstrating an abscess extending from the right infratemporal fossa into the temporal region, occupying a substantial space beneath the temporal fascia and involving the temporalis muscle.



Figure 5a,b: Postoperative clinical photograph obtained one week after drain removal, demonstrating complete resolution of facial swelling and erythema, with satisfactory healing of both intraoral and extraoral incision sites.



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Figure 6a,b: Postoperative follow-up examinations revealed no recurrence of infection, with gradual improvement of trismus, reaching 30 mm at 10 months postoperatively, demonstrating satisfactory healing of intraoral and extraoral incision sites with an acceptable level of scarring

MATERIAL AND METHOD

This study was designed as a case report accompanied by a concise review of the relevant literature. A search of the PubMed/MEDLINE databases was conducted for English-language publications published between 2005 and 2025. The search strategy used was “(odontogenic infection OR dental origin OR wisdom tooth extraction) AND (infratemporal fossa abscess OR infratemporal space OR temporal fossa abscess),” which yielded a total of 50 articles.

These articles were screened based on predefined exclusion criteria. Abscesses secondary to displaced teeth or root fragments within the infratemporal fossa, pseudotumor-like lesions, lipomas involving the masticatory region, neoplastic cases, and infratemporal fossa abscesses associated with temporomandibular joint (TMJ) dislocation were excluded. Only eight cases of infratemporal or temporal fossa abscesses of odontogenic origin that developed secondarily following tooth extraction were included in this study.

RESULTS

Although uncommon, abscesses of the infratemporal and temporal fossae following dental infections can progress rapidly and lead to life-threatening complications if not

promptly recognized and treated. Among the identified cases, the maxillary third molars were most frequently implicated as the primary source of infection, although other molar teeth were reported as causative in some instances. (Table 1). Penicillin-class antibiotics were administered in four cases, while a combination of penicillin and nitroimidazole agents was employed in two cases. Cephalosporin and lincosamide antibiotics were each used in one case. Surgery under either local or general anesthesia is often required, while the extent of trismus caused by infection can significantly influence the choice of intubation method or even necessitate a life-saving tracheostomy if the procedure must be performed under general anesthesia. In most cases, culture results were not reported. However, in the systematic review conducted by Young et al., *Streptococcus* and *Staphylococcus* species were identified in the majority of cultures. *Streptococcus anginosus* was isolated in one case, while both *Streptococcus anginosus* and *Eikenella corrodens* were identified in another. In almost all reported cases, an intraoral approach was preferred for the drainage of ITF abscesses. Coexisting inflammation of the intracranial, intranasal, orbital, and maxillary sinuses is very rarely encountered. Improved diagnostics using CT and MRI can aid in identifying and diagnosing the early spread of infection toward the eye socket, cranial base, or intracranial structures.



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Table 1: Summary of reported infratemporal fossa (ITF) abscess cases of odontogenic origin in the literature.

Study	Etiology/Source Teeth	Site of Infection	Imaging	Antibiotic	Culture	Age/Sex	Follow-up	Incision
Daines et al.(2022)	Maxillary third molar	ITF	CT	IV piperacillin-tazobactam followed by oral amoxicillin-clavulanic acid	Streptococcus Anginosus	26 M	2 Weeks	Intraoral(buccal mucosa)
Sundaram et al. (2014)	NR	ITF	CT	Specific antibiotic not reported	NR	47 M	Post-op 1 year	Intraoral(sublabial)
Masgerzadeh et al.(2012)	Maxillary third molar	ITF	CT	Empirical IV Penicillin and Metronidazole	NR	40 M	1 Week	Intraoral (anterior part of ascending ramus)
Park et al.(2018)	NR	ITF	CT/MRI	Amoxicillin-clavulanic acid and metronidazole	NR	76 M	4 Weeks	
Kasahara et al.(2015)	Maxillary molar	ITF	CT	IV cefepime and clindamycin	NR	67 M	3 Weeks	Intraoral(Buccal mucosa)
Kotagiri et al.(2024)	Maxillary and mandibular third molars	ITF	CT/MRI	Amoxicillin-clavulanic acid	S.Anginosus and E.Corrodens	20 M	2 Weeks	Only incision reported
Young et al.(2025)	Mostly third molars	ITF	CT	Specific antibiotic not reported	Mostly Streptococcus Spp. And Staphylococcus Spp.			
Akst et al.(2005)	Mandibular molar	ITF	CT	Specific antibiotic not reported	NR	32 F	3 Weeks	Intraoral(buccal mucosa)

Abbreviations: ITF- Infratemporal Fossa, CT-Computed Tomography, MRI-Magnetic Resonance Imaging, NR-Not reported, M-Male, F-Female

DISCUSSION

An infratemporal fossa abscess is a rare infectious condition that typically develops as a result of odontogenic infections spreading to adjacent structures.⁸ Accurate diagnostics and adequate surgical abscess drainage are very important. Some authors recommend needle puncture to assess the presence of pus. A history of previous oral infections or tooth extractions is common, and the development of infratemporal fossa abscesses typically occurs after a delay of several weeks to months.⁸⁻¹⁰ Akst et al. reported a case of an ITF abscess that was diagnosed two months after tooth extraction.⁸ In our case, the patient had undergone extraction of an upper third molar two weeks earlier and subsequently presented with a distinct infratemporal fossa abscess. Maxillary oral infections often extend superiorly into the temporal space and may lead to abscess formation through direct involvement of the lateral or medial pterygoid muscles.¹¹ In our case, the infection most likely

originated in the infratemporal fossa and only later extended superiorly into the temporal space, a progression that initially masked the clinical picture. The patient's early symptoms were misinterpreted as routine post-extraction socket pain, resulting in a delay in referral and diagnosis. Sometimes, even a patient's daily routine, oral habits, and poorly controlled diabetes can influence the occurrence of such ITF. This diagnostic latency likely contributed to the silent progression of an ITF abscess which only became clinically obvious when the infection broke into the superficial temporal layers and produced extraoral swelling. Similar to a 'smouldering fire behind a wall,' such infections may remain concealed until they extend into more superficial compartments. Recent reviews (Young et al. / Kotagiri et al.) have emphasized that temporal extension is a late but critical feature that both unmasks the abscess and complicates management.⁴



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Patients with infratemporal fossa abscesses typically present with trismus, facial pain, and impaired mastication, which are primarily attributed to irritation and involvement of the lateral and medial pterygoid muscles.¹² Trismus was observed in all reported cases and constituted one of the most common clinical findings. Similarly, our patient exhibited severe LMO. Furthermore, improvement or resolution of trismus in early inflammation stages following therapy is considered one of the key indicators of successful treatment outcomes in ITF abscess cases. Extensive exercises and mechanotherapy help reduce the risk of progressive LMO over time. Extension of the infection to the cavernous sinus or deep cervical fascia is associated with a significantly increased risk of mortality.⁸ Kotagiri et al. reported a case in which sepsis occurred secondary to an ITF abscess.¹³ Maxillofacial computed tomography (CT) is the imaging modality of choice for early diagnosis, as it enables evaluation of abscess spread and exclusion of other potential pathologies, including neoplasms.¹⁴ CT was the primary imaging modality employed in all cases included in our review. Because most dental infections are treated on an outpatient basis within dental clinics, they are often not systematically recorded in national health statistics. However, a review of the literature reveals that, owing to advances in medical management and surgical techniques, no direct deaths associated with ITF abscesses of odontogenic origin have been reported in recent years.¹⁵ Nevertheless, fatalities related to cavernous sinus thrombosis, a serious complication of this condition, have been documented.¹⁶ Improving presurgical preparations—such as mouth rinsing with an antibacterial solution or removing potential sources of infection just before surgery—may enhance patient outcomes, especially in diabetic patients. This case report and literature review highlight that abscesses arising in the infratemporal and temporal fossa after tooth extraction are rare but potentially life-threatening infections. Prompt diagnosis, targeted antibiotic therapy, and the use of combined drainage approaches are crucial for achieving successful clinical outcomes.

AUTHOR CONTRIBUTIONS

Ö.U. contributed to the conception, case planning, and writing of the final manuscript. D.G.C. and K.B.E. were involved in case planning and writing. K.N. contributed to literature research, review, supervision, and writing of the final manuscript.

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CONFLICT OF INTEREST

None

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None

ETHICAL APPROVAL

Not applicable

INFORMED CONSENT

Informed consent was obtained from the patient.

REFERENCES

1. Zawiślak E, Nowak R. Odontogenic Head and Neck Region Infections Requiring Hospitalization: An 18-Month Retrospective Analysis. *Biomed Res Int.* 2021;2021. doi:10.1155/2021/7086763,
2. Eisler L, Wearda K, Romatoski K, Odland RM. Morbidity and cost of odontogenic infections. *Otolaryngology - Head and Neck Surgery [United States].* 2013;149(1):84-88. doi:10.1177/0194599813485210,
3. Stephens MB, Wiedemer JP, Kushner GM. Dental Problems in Primary Care. *Am Fam Physician.* 2018;98(11):654-660. Accessed September 7, 2025. <https://www.aafp.org/pubs/afp/issues/2018/1201/p654.html>
4. Young K, Tang DM, Wu AW. Infratemporal Fossa Abscesses: A Systematic Review of Cases. *Ear Nose Throat J.* 2025;104(6):375-382. doi:10.1177/01455613221121040/SUPPL_FILE/SJ-PDF-1-EAR-10.1177_01455613221121040.PDF
5. Ingallina F, Alfertshofer MG, Schelke L, et al. The Fascias of the Forehead and Temple Aligned—An Anatomic Narrative Review. *Facial Plast Surg Clin North Am.* 2022;30(2):215-224. doi:10.1016/j.fsc.2022.01.006
6. Casale J, Bordoni B. Anatomy, Head and Neck: Infratemporal Fossa. *StatPearls.* Published online July 24, 2023. Accessed September 8, 2025. <https://www.ncbi.nlm.nih.gov/books/NBK537034/>
7. Dang NP, Delbet-Dupas C, Mulliez A, Devoize L, Dallel R, Barthélémy I. Five Predictors Affecting the Prognosis of Patients with Severe Odontogenic Infections. *International Journal of Environmental Research and Public Health* 2020, Vol 17, Page 8917. 2020;17(23):8917. doi:10.3390/IJERPH17238917



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8. Akst LM, Albani BJ, Strome M. Subacute infratemporal fossa cellulitis with subsequent abscess formation in an immunocompromised patient. *American Journal of Otolaryngology - Head and Neck Medicine and Surgery*. 2005;26(1):35-38. doi:10.1016/j.amjoto.2004.06.015
9. Mesgarzadeh AH, Ghavimi MA, Gok G, Zarghami A. Infratemporal space infection following maxillary third molar extraction in an uncontrolled diabetic patient. *J Dent Res Dent Clin Dent Prospects*. 2012;6(3):113-115. doi:10.5681/JODDD.2012.024,
10. Varshney R, Zawawi F, Tewfik MA. Endoscopic Drainage of an Odontogenic Pterygoid Muscle Abscess. *Case Rep Otolaryngol*. 2013;2013:215793. doi:10.1155/2013/215793
11. Yonetsu K, Izumi M, Nakamura T. Deep facial infections of odontogenic origin: CT assessment of pathways of space involvement. *AJNR Am J Neuroradiol*. 1998;19(1):123. Accessed September 10, 2025. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8337342/>
12. Guo YX, Sun ZP, Liu XJ, Bhandari K, Guo CB. Surgical safety distances in the infratemporal fossa: Three-dimensional measurement study. *Int J Oral Maxillofac Surg*. 2015;44(5):555-561. doi:10.1016/j.ijom.2014.06.004
13. Kotagiri R, Repp ML, Kim MH, Stipho F. Infratemporal abscess: a rare complication of a common procedure. *Access Microbiol*. 2024;6(2):000721.v3. doi:10.1099/ACMI.0.000721.V3
14. Lisan Q, Leclerc N, Kania R, Guichard JP, Herman P, Verillaud B. Infratemporal fossa tumors: When to suspect a malignant tumor? A retrospective cohort study of 62 cases. *Eur Ann Otorhinolaryngol Head Neck Dis*. 2018;135(5):311-314. doi:10.1016/j.anorl.2018.06.005
15. Łysenko L, Leśnik P, Nelke K, Gerber H. Immune disorders in sepsis and their treatment as a significant problem of modern intensive care. *Postepy Hig Med Dosw (Online)*. 2017;71(1):703-712. doi:10.5604/01.3001.0010.3849
16. Pereira RS, Guerra RC, Hochuli-Vieira E, Alves FRF. Cavernous sinus thrombosis followed by brain ischaemia in a type-1 diabetic patient: a persistent endodontic infection report. *Australian Endodontic Journal*. 2022;48(3):510-514. doi:10.1111/AEJ.12579