SUCCESSFUL TREATMENT OF FACIAL ACTINOMYCOSIS ASSOCIATED WITH COMPLEX DENTAL HISTORY

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History of Present Illness

A 38-year-old female presented with a 3-week history of a purulent swelling involving the right zygoma. She was recently seen by her family medicine provider via telemedicine and was prescribed a one-week course of Cephalexin. Rather than improving, the swelling worsened and began draining thick, caseous purulent material. Physical examination revealed a deep ulcer with ragged edges and marked right-sided facial edema involving the upper zygoma and periorbital skin **(Figure 1).** After incision and drainage, the resulting specimen was sent for histopathologic evaluation **(Figure 3).**

Figure 1

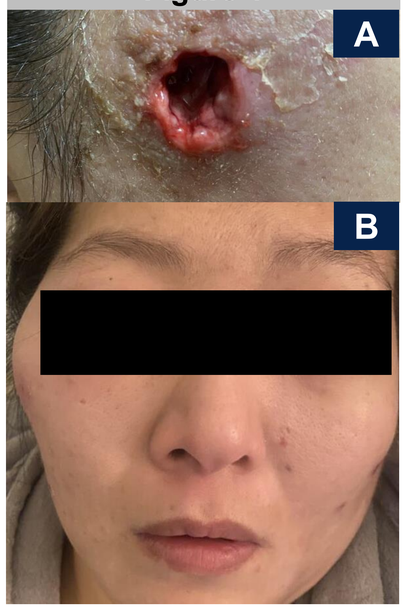

Figure 1: (A) Right malar cheek with deep ulcer/sinus cavity exposed after I&E associated with marked swelling/deformity **(B)**.

Figure 2

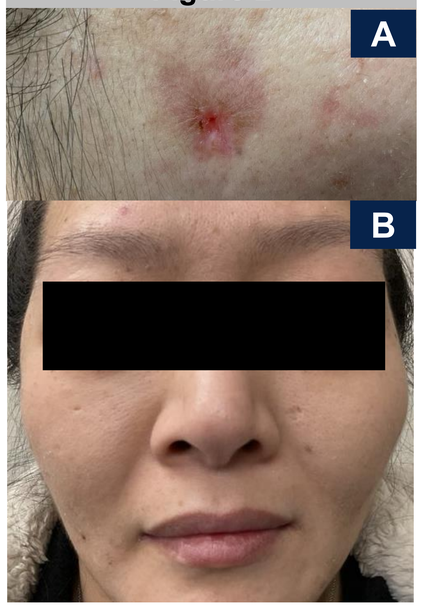

Figure 2: (A) Closure of ulcer/sinus tract following treatment with resolution of facial swelling and return to baseline **(B)**.

Figure 4

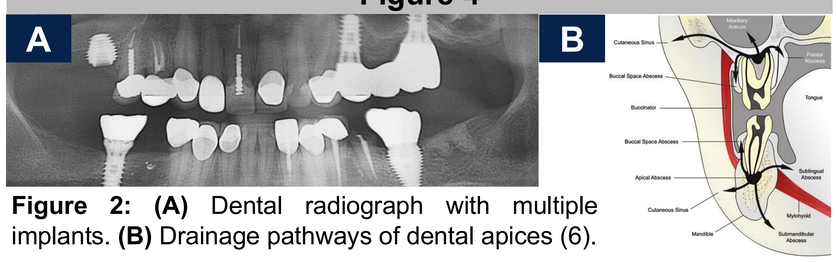

Figure 2: (A) Dental radiograph with multiple implants. **(B)** Drainage pathways of dental apices (6).

Histopathology

Figure 3

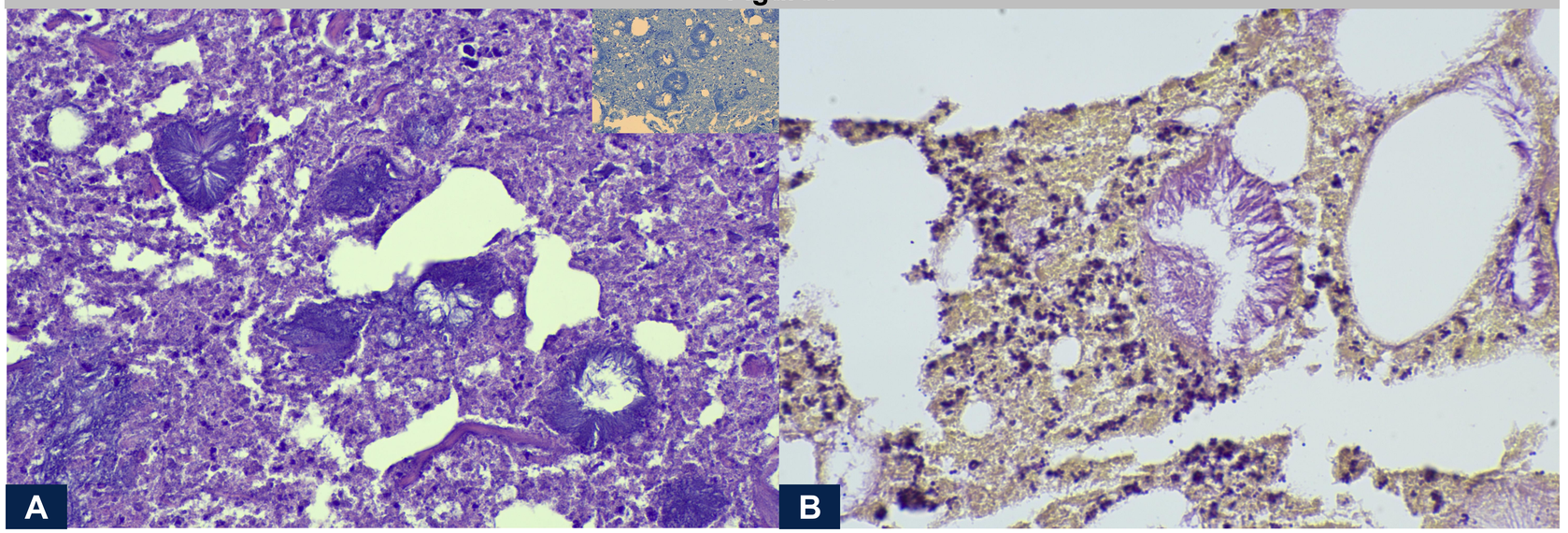

Figure 3: (A) H&E (40x) showing nodular aggregations of radiating filaments leaving a crystalline appearance within a background of caseating necrosis with neutrophilic debris. **Inset:** AFB staining is negative. **(B)** Gram stain showing gram-positive filamentous bacteria forming round, crystalline aggregations with an associated neutrophilic response.

Diagnosis, Clinical Course, & Discussion

Microscopic examination revealed abundant caseous necrosis and neutrophilic inflammation of dermal tissues. Careful inspection revealed circular, basophilic, granular nodules with radially-oriented, cleft-like spaces. Gram stain revealed gram-positive filaments, which were AFB & Fite-negative, consistent with *Actinomyces*. Post-procedure evaluation revealed a deep dermal defect with an underlying abscess cavity and sinus tract. The patient was prescribed an extended course of Cephalexin and at six-week follow up, complete resolution with spontaneous closure of the defect was achieved **(Figure 2).**

Given concern for an odontogenic source, the patient was referred to her known periodontist. Review of dental records revealed a complex dental history involving multiple surgical implants and recurrent dental infections involving the right upper molars **(Figure 4).** This clinically and histopathologically-impressive case of cervicofacial actinomycosis highlights the importance of understanding a patient's dental history particularly when evaluating complex facial pathology. It also presents an opportunity to gain a more nuanced understanding of facial anatomy and its correspondence to underlying odontogenic structures.

References

1. Bali RK, Sharma P, Gaba S, Kaur A, Ghanghas P. A review of complications of odontogenic infections. *Natl J Maxillofac Surg*. 2015;6(2):136-143.
2. Gajdács M, Urbán E, Terhes G. Microbiological and Clinical Aspects of Cervicofacial *Actinomyces* Infections: An Overview. *Dent J (Basel)*. 2019;7(3):85. Published 2019 Sep 1.
3. Hoerter JE, Malkin BD. Odontogenic Orofacial Space Infections. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; July 12, 2023.
4. Lindner HH. The anatomy of the fasciae of the face and neck with particular reference to the spread and treatment of intraoral infections (Ludwig's) that have progressed into adjacent fascial spaces. *Ann Surg*. 1986;204(6):705-714.
5. Al-Qattan, MM, Almotairi MI. Facial cutaneous lesions of dental origin: A case series emphasizing the awareness of the entity and its medico-legal consequences. Int J Surg Case Rep. 2018 Oct 26;53:75–78.
6. Sammut S., Malden N., Lopes V. Facial cutaneous sinuses of dental origin-a diagnostic challenge. *Br Dent J.* 2013 Dec;215(11):555-8.