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Case Report

Conservative Treatment of Facial Tissue Necrosis Caused by Odontogenic Infection

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Abstract

The presence of extraoral fistulas usually results from infections secondary to trauma, dental caries with pulp involvement, or failed endodontic treatment. After affecting periapical tissue, these infections follow paths of lower resistance to drain purulent material. Fistulas usually occur intraorally, but, in some cases, they may break through to the outside of the face, causing severe tissue damage. Proper identification and elimination of the etiological factor as well as disinfection of contaminated tissues are essential for successful treatment. We report a case of facial tissue necrosis caused by odontogenic infection and propose a conservative approach, without facial flap rotation, for the repair of tissue necrosis. Successful treatment of facial necrosis caused by odontogenic infections is directly related to the control and resolution of dental infectious foci. Facial flap rotation, if necessary, should be performed at a later stage.

Keywords: Facial Fistula, Focal Infection, Maxillofacial Infection, Odontogenic Fistula, Oral Surgery

Introduction

Odontogenic infections are polymicrobial in nature, affecting the teeth and periodontal tissues. They are the most common infections of the cervicofacial region and, if left untreated, can promote dental abscess formation and tissue destruction, subsequently affecting the alveolar bone and surrounding soft tissues by following paths of lower tissue resistance [1].

Fistulas usually occur intraorally. However, they may break through to the outside of the face if chronic infectious processes are not properly treated [2,3]. In addition to facial aesthetic sequelae, odontogenic infections, if left untreated, can have serious consequences such as mediastinitis, pulmonary complications, sepsis, hypoxia, cardiac arrest, and even death [4].

Case Description and Results

A male patient presented to the emergency department with intense, throbbing pain associated with an increase in facial volume. The patient was first seen by a general practitioner, who diagnosed a facial abscess due to infectious foci of odontogenic origin. An incision was made on the face, and the abscess was drained (Figure 1A) and sutured. During hospitalization, the patient was treated with intravenous ampicillin (1000 mg every 6 hours), dipyrone (1000 mg every 6 hours), and tramadol (50 mg every 12 hours). Facial pain disappeared completely, and the patient was discharged and referred for dental evaluation. Postoperative home-based care included antibiotic therapy with oral azithromycin (500 mg every 24 hours for 5 days) and analgesia with oral ibuprofen (600 mg every 8 hours for 5 days).

Ten days after initial medical treatment, the patient returned to the emergency department reporting that the intense pain had returned, and the infection persisted, with the development of a new extraoral fistula located just below the site of the first fistula (Figure 1B), but with no increase in facial volume. The emergency physician required evaluation by an oral and maxillofacial surgeon, who confirmed the diagnosis of extraoral fistula caused by odontogenic infection. The patient was then admitted for initiation of intravenous antibiotic therapy with ampicillin (1000 mg) combined with sulbactam (500 mg) every 6 hours. Analgesia included intravenous ketoprofen (100 mg every 12 hours) and intravenous dipyrone (1000 mg every 6 hours), with administration of morphine (4 mg every 4 hours) if intense pain was present despite the use of other analgesics.

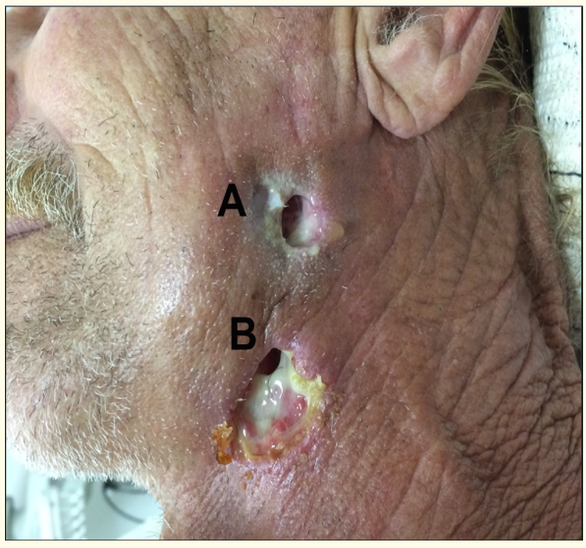

Figure 1: Intraoperative clinical image showing areas of necrotic tissue on the face caused by odontogenic infection. A) Area of the primary fistula. B) Area of the secondary fistula, developed 10 days after the first intervention.

Forty-eight hours after the start of intravenous treatment, the affected teeth were extracted (Figure 2A and 2B), followed by debridement of necrotic tissue from the face. The procedure was performed under local anesthesia accomplished by intraoral injections performed for tooth extraction, with no additional intra- or extraoral injections. Debridement was performed with hemostatic forceps and delicate scissors in order to preserve healthy tissue. The facial wound was abundantly rinsed with a 10-volume hydrogen peroxide solution diluted 1:1 in saline solution (Figure 3A and 3B). After the wounds were debrided and cleaned (Figure 3C), Dermazin® cream was applied topically (Figure 3D) to promote local bactericidal effect. While hospitalized, the patient was evaluated at 48 hours postoperatively (Figure 3E). After being discharged with improved condition, the patient was seen at 5 days (Figure 3F) and 20 days (Figure 3G) postoperatively, and then at 5 years after hospital discharge (Figure 3H). Written informed permission was obtained from the patient to publish this case report for scientific purposes.

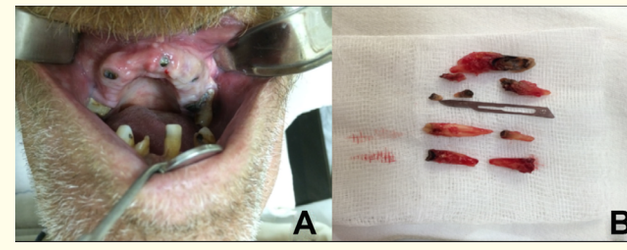

Figure 2: A) Intraoperative clinical image showing root debris causing the infection that led to facial tissue necrosis. B) Clinical image of root debris after tooth extraction.

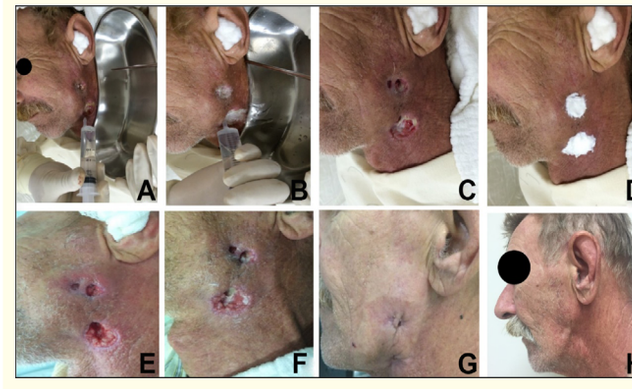

Figure 3: A) Intraoperative clinical image showing facial wound cleaning with saline solution. B) Facial wound cleaning with saline solution associated with 10-volume hydrogen peroxide solution (1:1). C) Intraoperative clinical image showing necrotic facial wounds after debridement and cleaning with the solution. D) Intraoperative clinical image showing areas of necrotic tissue on the face covered with Dermazin® (cream). E) Image at 48 hours postoperatively. F) Image at 5 days postoperatively. G) Image at 20 days postoperatively. H) Image at 5 years postoperatively.

Discussion

Odontogenic infections can be treated surgically or non-surgically. The latter usually involves the endodontic treatment of the tooth that is causing the infection [5]. However, in both scenarios, correct identification of etiological factors, by clinical examination and imaging studies, is extremely important to determine whether the condition should be treated conservatively or not. Total elimination of the infectious focus and causative agent is essential for the successful treatment of fistulas, especially when they occur extraorally; otherwise, the lesion may recur, as observed in the case reported here, leading to greater tissue damage due to continued destruction of hard and soft tissues caused by dissemination of the infectious process along the fascial planes [6]. This is the principle that underlies the treatment of infections, but it was not correctly applied in the first instance, since the patient was not subjected to dental care to remove the agent causing the infectious focus after initial emergency admission, and nor was he subjected to this curative procedure during hospitalization, leading to infection recurrence associated with functional and cosmetic impairment.

Surgical treatment should always aim to maximally preserve healthy tissue and to be as conservative as possible, using antimicrobial therapy as the key factor in eliminating local infection [7]. However, use of medications alone will not be sufficient as a treatment strategy if the agent causing the infection is not eliminated. Therefore, extraction or endodontic treatment of the affected tooth or teeth should be performed first to remove the causative agent of infection, allowing adequate drainage and debridement of the infected area. Extraoral drainage, through an incision, should promote a free drainage path that allows purulent contents to exit the tissue, thereby avoiding secretion build-up on deeper planes and, consequently, persistence or recurrence of the infectious process [8].

Antibiotic therapy is indicated in cases of edema or systemic involvement, and penicillins are the antimicrobials of choice for treating odontogenic infections. If the patient is allergic to penicillins, clindamycin is recommended [4]. In the case reported here, the ampicillin-sulbactam combination was administered intravenously due to the need for a faster bactericidal and bacteriostatic effect than that obtained with oral administration, since the drugs bind directly to their receptors, obviating the need for drug absorption and distribution. Also, the ampicillin-sulbactam combination was used because sulbactam allows a broader antibiotic coverage, being effective even against resistant bacteria, since, in the present case, the patient had no bacteriological examination and presented with recurrent infection-which may have been caused by ampicillin-resistant bacteria [9].

In addition to systemic antimicrobials, other ancillary medications can be used for local bacterial control. One of these medications is Dermazin® (Silvestre Labs Química e Farmacêutica Ltda., Rio de Janeiro, Brazil), a silver sulfadiazine cream used as a treatment adjunct for wound disinfection due to its antimicrobial, healing, and analgesic efficacy, therefore being increasingly used on open wounds, such as burn wounds [10,11].

Although the antimicrobial properties of silver sulfadiazine have been widely recognized, there are no reports of its use in the dental literature. However, in the case reported here, topical application of this medication on facial wounds was effective, obviating the need for facial flap rotation to repair areas of facial tissue loss due to tissue necrosis resulting from infection of odontogenic origin.

Conclusion

Even without reports of use of silver sulfadiazine in the dental literature, in the case reported, its topical applications aid in the healing of wounds. However, there are more studies to show its use in dentistry.

Conflict of Interest

We have no conflicts of interest.

Ethics Statement/Confirmation of Patients' Permission

The authors confirm that the patient is aware about this article and consented to the treatment performed, including pictures of the procedure. Any personal details of the patient included in any part of this paper and supplementary material was removed prior to submission.

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Bibliography

1. De Quintana-Sancho A., *et al*. "[Odontogenic cutaneous fistula: a diagnostic challenge]". *Anales del Sistema Sanitario de Navarra Navarre* 40.3 (2017): 471-474.

2. Gimenez-Garcia R., *et al*. "Cutaneous sinus tracts of odontogenic origin: two case reports". *Journal of the American Board of Family Medicine* 28.6 (2015): 838-840.

3. Pasternak-Junior B., *et al*. "Diagnosis and treatment of odontogenic cutaneous sinus tracts of endodontic origin: three case studies". *International Endodontic Journal* 42.3 (2009): 271-276.

4. Vytla S and Gebauer D. "Clinical guideline for the management of odontogenic infections in the tertiary setting". *Australian Dental Journal* 62.4 (2017): 464-470.

5. Yeturu SK., *et al*. "Effect of Aloe vera, chlorine dioxide, and chlorhexidine mouth rinses on plaque and gingivitis: A randomized controlled trial". *Journal of Oral Biology and Craniofacial Research* 6.1 (2016): 54-58.

6. Chen K., *et al*. "Diagnosis and treatment of odontogenic cutaneous sinus tracts in an 11-year-old boy: a case report". *Medicine (Baltimore)* 95.20 (2016): e3662.

7. Bertossi D., *et al*. "Odontogenic orofacial infections". *Journal of Craniofacial Surgery* 28.1 (2017): 197-202.

8. Flynn TR., *et al*. "The use of drains in oral and maxillofacial surgery: a review and a new approach". *Journal of Oral and Maxillofacial Surgery* 41.8 (1983): 508-511.

9. Yunoki T., *et al*. "Genetic identification and antimicrobial susceptibility of clinically isolated anaerobic bacteria: A prospective multicenter surveillance study in Japan". *Anaerobe* 48 (2017): 215-223.

10. Privett BJ., *et al*. "Synergy of nitric oxide and silver sulfadiazine against gram-negative, gram-positive, and antibiotic-resistant pathogens". *Molecular Pharmaceutics* 7.6 (2010): 2289-2296.

11. Venkataraman M and Nagarsenker M. "Silver sulfadiazine nanosystems for burn therapy". *AAPS PharmSciTech* 14.1 (2013): 254-264.

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