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Chemical burn in the oral cavity caused by contact with a Portuguese man-of-war (*Physalia Physalis*): an unusual case report

Quemadura química en la cavidad bucal causada por contacto con la Carabela Portuguesa (*Physalia physalis*): un caso inusual

Andrés Acosta-Acuña[1a], Ramón Pedraza-Parra[2b], Jorge Pérez-Benavides[3b], Jonathan Harris-Ricardo[4c], Jaime Plazas-Román[5d*], Antonio Díaz-Caballero[6e]

SUMMARY

Background**: The Portuguese man-of-war (Physalia physalis) is a marine siphonophore whose venomous tentacles can cause severe chemical burns. Oral cavity involvement is extremely rare and poorly documented in medical literature.* ***Case Report: *A 43-year-old male presented with painful oral lesions after accidentally ingesting a Portuguese man-of-war tentacle during marine activities. Clinical examination revealed a 4×1.5 cm ulcerative lesion on the left hard palate with erythematous and necrotic zones. The marine biology laboratory confirmed the identification of the tentacles. Treatment included topical pharmacological therapy with nystatin, hydrocortisone, vitamins A and E, lidocaine, systemic antibiotics, analgesics, and corticosteroids. Histopathological analysis confirmed chemical burn with extensive ulceration and necrosis. Complete healing was achieved after 30 days with minimal residual erythema.* ***Conclusions**: This case represents an exceptionally rare presentation of oral chemical burns from Portuguese man-of-war envenomation. Healthcare professionals in coastal areas should be aware of this possibility and prepared for immediate management to prevent severe complications. The multidisciplinary approach combining pharmacological, surgical, and supportive measures proved effective for tissue regeneration and symptom relief.*

Keywords: *Portuguese man-of-war, Physalia physalis, Oral cavity, Chemical burn, Marine envenomation*

ORCID:
[1] 0009-0009-8497-5772
[2] 0009-0009-7947-0366
[3] 0000-0003-4502-7760
[4] 0000-0002-4662-0729
[5] 0000-0002-5040-6899
[6] 0000-0001-9693-2969

[*]**Corresponding author:** Jaime Plazas Román, E-mail: jplazasr@unicartagena.edu.co - Facultad de Odontología, Universidad de Cartagena, Campus de la Salud, Zaragocilla, Cartagena, Bolívar, Colombia

a. Dentist. Resident of Stomatology and Oral Surgery, University of Cartagena, Colombia
b. Dentist. Specialist in Stomatology and Oral Surgery. Professor, University of Cartagena, Colombia
c. Dentist. MSc Molecular Microbiology, Specialist in Stomatology and Oral Surgery. Professor, University of Cartagena and Rafael Núñez University Corporation, Cartagena, Colombia
d. Dentist. Master in Bioinformatics, Universidad Tecnológica de Bolívar. Specialist in Pediatric Dentistry and maxillary orthopedics, Professor at Universidad de Cartagena, Cartagena. Professor Universidad del Sinú, seccional Cartagena, Cartagena. Research Group GITOUC
e. Dentist. PhD Biomedical Sciences, MSc in Education, Specialist in Periodontics. Professor, University of Cartagena. Research Group Director GITOUC

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RESUMEN

***Antecedentes**: La carabela portuguesa (Physalia physalis) es un sifonóforo marino cuyos tentáculos venenosos pueden causar quemaduras químicas graves. La afectación de la cavidad oral es extremadamente rara y escasamente documentada en la literatura médica.* ***Caso clínico:** Un hombre de 43 años presentó lesiones orales dolorosas tras la ingestión accidental de un tentáculo de carabela portuguesa durante actividades marinas. El examen clínico reveló una lesión ulcerativa de 4 × 1,5 cm en el paladar duro izquierdo con zonas eritematosas y necróticas. El laboratorio de biología marina confirmó la identificación de los tentáculos. El tratamiento incluyó terapia farmacológica tópica con nistatina, hidrocortisona, vitaminas A y E, lidocaína, antibióticos sistémicos, analgésicos y corticosteroides. El análisis histopatológico confirmó una quemadura química con ulceración y necrosis extensas. Se logró la curación completa a los 30 días, con un eritema residual mínimo.* ***Conclusiones**: Este caso representa una presentación excepcionalmente rara de quemaduras químicas orales por envenenamiento por carabela portuguesa. Los profesionales de la salud en zonas costeras deben estar al tanto de esta posibilidad y preparados para un manejo inmediato que prevenga complicaciones graves. El abordaje multidisciplinario, que combinó medidas farmacológicas, quirúrgicas y de apoyo, demostró ser eficaz para la regeneración tisular y el alivio de los síntomas.*

Palabras clave: *Carabela portuguesa, Physalia physalis, Cavidad oral, Quemadura química, Envenenamiento marino*

INTRODUCTION

Chemical burns in the oral cavity represent a serious medical condition resulting from contact between caustic substances and oral mucous membranes. These injuries can cause significant tissue damage, severe pain, and in extreme cases, necrosis (1). While most oral chemical burns result from accidental ingestion of household chemicals or industrial substances, marine organisms represent an unusual but potentially dangerous source of such injuries.

The Portuguese man-of-war (*Physalia physalis*) is a colonial marine siphonophore commonly mistaken for a jellyfish. This organism possesses long tentacles that can extend up to 30 meters and contain specialized cells called nematocysts filled with potent neurotoxic and hemolytic venom (2). Contact with human skin typically results in immediate, intense pain, erythema, and linear welts, with potential for systemic symptoms in severe cases (3).

Although Portuguese man-of-war stings are well-documented on exposed skin during aquatic activities (4), oral cavity involvement represents an extremely rare occurrence with minimal documentation in medical literature. The unique anatomical characteristics of the oral mucosa, including its high vascularity and delicate structure, may predispose it to more severe and prolonged damage than external skin exposure.

This case report presents the first photographically documented instance of oral chemical burns resulting from direct contact with Portuguese man-of-war tentacles, highlighting the diagnostic challenges and therapeutic approaches to this unusual presentation.

Case report

A 43-year-old healthy male patient was referred to the Stomatology and Oral Surgery Department of a Colombian University, presenting with severe oral pain and unknown-origin lesions. The patient reported that during an evening beach gathering, while under the influence of alcohol, he entered the ocean and engaged in recreational activities, including jumping and singing. During these activities, he felt something enter his mouth but paid little attention to it at first.

By the following morning, the patient experienced severe oral pain, prompting him to seek emergency medical care. Initial emergency treatment included antibiotics, analgesics, hyaluronidase gel, and antiparasitic medication due to eosinophilia detected in blood tests. This treatment provided temporary relief for several days, but the symptoms subsequently intensified, prompting referral to specialist care.

During clinical history taking, the patient reported acute pain localized to the left hard

palate, accompanied by pruritus and scoring 9/10 on the visual analog pain scale. He suspected the symptoms were related to contact with a marine organism, as a family member who had been in the same water experienced similar symptoms on their extremities. Significantly, the patient had retrieved a fragment of the causative organism from his mouth, which was subsequently sent for marine biological analysis.

The marine biology laboratory identified the specimen as a coiled tentacle of the Portuguese man-of-war (*Physalia physalis*) based on morphological characteristics, confirming the suspected diagnosis (Figure 1B).

Clinical Examination: Intraoral examination revealed an extensive ulcerative lesion measuring approximately 4 cm in length and 1.5 cm in width, located on the left hemipalate. The lesion presented with erythematous and whitish zones over an edematous base, irregular borders, and significant pain response to palpation (Figure 1A). The clinical appearance was consistent with chemical burn-induced necrosis. The marine biology laboratory confirmed the retrieved specimen as a coiled tentacle of Portuguese man-of-war (*Physalia physalis*) based on morphological characteristics (Figure 1B).

Treatment Protocol: Following multidisciplinary consultation, an incisional biopsy was performed to assess the cellular and soft-tissue response to the marine toxin. Written informed consent was obtained before all procedures.

Initial topical therapy included: Nystatin 100,000 IU/mL (antifungal prophylaxis); Hydrocortisone 2% (anti-inflammatory); Vitamin A 250 mg and Vitamin E 300 IU (epithelial regeneration); Lidocaine jelly 5% (pain management) and Orabase (mucosal protection).

On day 4 follow-up, despite clinical improvement and significant pain reduction, the lesion had enlarged (Figure 2A). A window biopsy was then performed, collecting both pathological and healthy tissue. The biopsy procedure involved moderate to severe bleeding controlled through standard hemostatic measures. Post-surgical care included application of a mucosal protective plate with surgical periodontal dressing (Figure 2B), followed by systemic therapy: Amoxicillin 875 mg every 12 hours for 5 days; Acetaminophen/Hydrocodone 325/5 mg every 8 hours for 5 days; Dexamethasone 8 mg intramuscular (single dose) and Triticum Vulgare and Aloe Vera gel applied topically over surgical cement.

Figure 1A Figure 1B

Figure 1. ***Initial Presentation and Specimen Identification*** A) Initial clinical presentation showing extensive ulcerative lesion on the left hemipalate with erythematous and whitish zones over edematous tissue, measuring approximately 4×1.5 cm with irregular borders. B) Portuguese man-of-war tentacle fragment retrieved from patient's mouth, confirmed by marine biology laboratory as Physalia physalis based on morphological characteristics

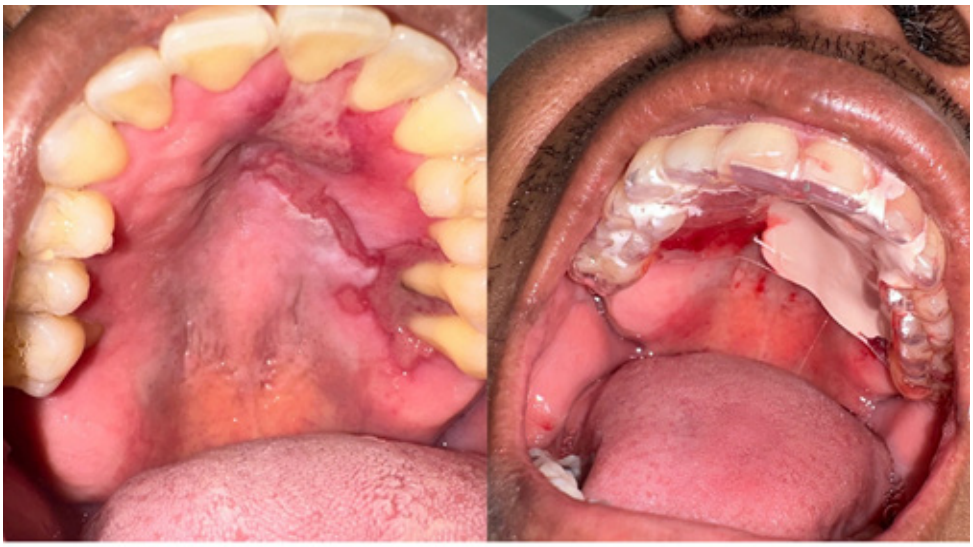

Figure 2A Figure 2B

Figure 2. ***Pre-biopsy Evolution and Surgical Management*** A) Clinical appearance at day 4 showing enlargement of the lesion despite initial topical treatment and pain reduction. B) Placement of mucosal protective plate with surgical periodontal dressing following incisional biopsy procedure

Histopathological Findings: Microscopic examination revealed squamous epithelium with extensive ulceration and necrosis, with the lamina propria displaying chronic inflammation and fibrosis (Figure 3A, 3B). No microorganisms or neoplastic cells were identified, confirming the diagnosis of chemical burn-induced tissue necrosis.

Follow-up and Clinical Evolution: Day 7: Lesion size had reduced with mild erythema and slight masticatory discomfort, showing early signs of re-epithelialization (Figure 4A). Day 21: Evident epithelial regeneration with only minor erythematous zones remaining, demonstrating significant clinical improvement (Figure 4B). Day 30: Approximately 90% healing achieved with

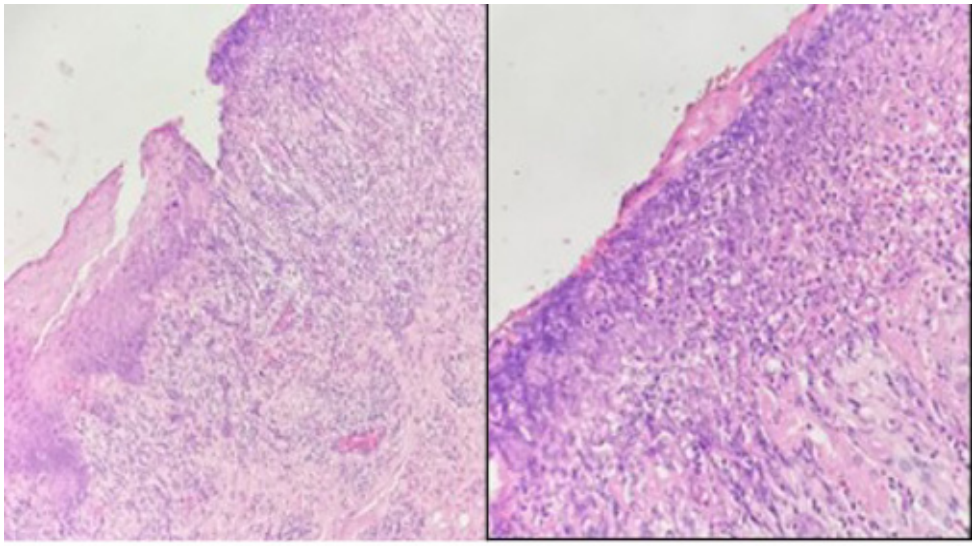

Figure 3A Figure 3B

Figure 3. ***Histopathological Findings*** A) Low magnification histological section showing oral mucosa lined with squamous epithelium demonstrating extensive ulceration and surface necrosis. B) Higher magnification view revealing lamina propria with chronic inflammatory infiltrate and early fibrosis, confirming chemical burn diagnosis without evidence of microorganisms or neoplastic cells

Figure 4A Figure 4B Figure 4C

Figure 4. ***Clinical Evolution and Healing Process*** A) Day 7 post-treatment showing lesion size reduction with mild erythema and initial re-epithelialization. B) Day 21 follow-up demonstrates significant epithelial regeneration with minimal residual erythematous zones. C) Day 30 evaluation revealing approximately 90% healing with minimal residual erythematous area and complete resolution of spontaneous pain and masticatory discomfort

a small residual erythematous area, absence of spontaneous pain, and no masticatory discomfort, representing near-complete tissue recovery (Figure 4C).

DISCUSSION

This case represents the first photographically documented report of oral chemical burns caused by direct Portuguese man-of-war contact. The extreme rarity of such presentations necessitates extrapolation from general literature on Portuguese man-of-war envenomation and chemical burn management.

Recent studies have demonstrated similar outcomes in the management of Portuguese man-of-war envenomation. Weber and Shalaby (2023) reported successful pain control using regional anesthesia techniques for Portuguese man-of-war stings, suggesting that advanced pain management strategies can significantly improve patient comfort during treatment (3). This aligns with our approach of multimodal analgesia, including systemic opioids and topical anesthetics. Cavalcante et al. (2020) conducted an extensive epidemiological analysis of Portuguese man-of-war envenomations along the Brazilian coast, confirming the serious health risks posed by this organism (2). Their findings support our emphasis on the need for professional healthcare in coastal regions.

The therapeutic approach employed in this case incorporates current evidence-based protocols for both marine envenomation and oral chemical burn management. Recent advances in chemical burn treatment have emphasized the importance of early intervention and comprehensive wound care. Hagiwara et al. (2020) described similar oral chemical burns from calcium oxide exposure, highlighting the effectiveness of physiological saline irrigation and antibiotic prophylaxis (4). VanHoy et al. (2023) provided updated guidelines for chemical burn management, emphasizing the critical role of immediate decontamination and appropriate wound care (5).

The use of natural healing agents in our protocol reflects emerging trends in regenerative medicine. Zheng et al. (2022) demonstrated that anti-inflammatory approaches significantly enhance healing in oral chemical burns, supporting our use of corticosteroids and natural healing promoters (6). Chae and Kang (2023) further emphasize the importance of proper chemical burn management to prevent complications (7).

Current literature on marine envenomation management continues to evolve. Hornbeak and Auerbach (2017) provided comprehensive guidelines for the treatment of marine

envenomation, including Portuguese man-of-war stings, emphasizing the importance of species identification and appropriate therapeutic interventions (8). Spyres and Lapoint (2020) highlighted the particular vulnerability of certain populations to severe marine envenomation reactions, supporting our emphasis on immediate and comprehensive treatment (9).

The successful healing observed in this case is consistent with current understanding of oral tissue regeneration. Toma et al. (2021) reviewed emerging regenerative therapies for oral wound healing, demonstrating the superior healing capacity of oral mucosa compared to other tissues (11). Izumi et al. (2023) explored tissue-engineered approaches to oral mucosal reconstruction, providing insights into the biological mechanisms that facilitated recovery in our patient (12).

Recent advances in understanding the mechanisms of oral mucosa healing have been particularly relevant to this case. Chen et al. (2025) described the unique anti-inflammatory properties of oral mucosa that contribute to faster, scar-free healing (13). This explains the remarkable recovery observed in our patient despite the severity of the initial injury.

This case contributes to the growing body of evidence supporting multidisciplinary approaches to unusual oral injuries. The integration of marine biology expertise, histopathological analysis, and advanced wound care techniques proved essential for optimal outcomes. Recent developments in oral tissue engineering and regenerative medicine, as reviewed by Matichescu (2020) and Sun et al. (2024), suggest that even more effective treatments may be available in the future (14,15).

Conflicts of interest

The authors declare no conflicts of interest. All authors have made substantial contributions to this study and manuscript, and all have reviewed the final paper prior to submission. The authors declare no financial conflicts of interest.

Ethics

This case report involved retrospective description of clinical findings during routine clinical treatment without hypothesis testing or systematic data collection. Written informed consent was obtained from the patient for publication of clinical data and images.

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Authors' contributions

AA-A: Case management, literature review, manuscript drafting, final approval RP-P: Case management, literature review, manuscript drafting, final approval. JP-B: Case management, final approval JH-R: Manuscript drafting, final approval JP-R: JH-R: Manuscript drafting, final approval AD-C: Literature review, manuscript drafting, final approval, supervision

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