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Scientific Note

First report of human wound myiasis caused by *Cochliomyia hominivorax* (Coquerel, 1858) (Diptera: Calliphoridae) in Oaxaca, Mexico

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Abstract. The New World screwworm fly, *Cochliomyia hominivorax* (Coquerel, 1858) (Diptera: Calliphoridae), is an obligate parasite of warm-blooded vertebrates and one of the most clinically important agents of myiasis, feeding on healthy living tissue and representing a major concern for both human and veterinary health. We report the first clinical case of human myiasis caused by *C. hominivorax* in San Andres Paxtlan, Oaxaca, Mexico. A 79-year-old man presented with a foul-smelling lesion on his left foot with a two-month history of progression. Physical examination revealed a necrotic ulcer with slough, purulent discharge, exposure of deep structures (tendons, muscle, and bone), and active myiasis. Twelve third-instar larvae were collected and identified based on morphology. Management included surgical irrigation, debridement, larval extraction, and negative-pressure wound therapy (NPWT). Treatment was complemented with broad-spectrum antibiotic therapy (clindamycin and levofloxacin) and fluid support. After five days of hospitalization, the patient showed hemodynamic and metabolic stability, resolution of the infection, and was discharged due to clinical improvement. Myiasis associated with neglected chronic wounds in vulnerable patients remains a significant clinical challenge and highlights the importance of early diagnosis and multidisciplinary management.

Keywords: Chronic ulcer, Larval infestation, Medical entomology, Neglected wound, New World screwworm.

Cochliomyia hominivorax (Coquerel, 1858) (Diptera: Calliphoridae), the New World screwworm fly, is an obligate parasite of warm-blooded vertebrates and one of the most clinically important agents of myiasis. Its larvae develop by feeding on healthy living tissue, creating progressively enlarging wounds that can result in intense pain, extensive tissue damage, secondary bacterial infections, and permanent disfigurement. Without prompt diagnosis and treatment, infestations may lead to severe complications, substantial morbidity, and, in some cases, death, representing a major concern for both human and veterinary health (Noutsis & Millikan 1994; Sherman 2000; Francesconi & Lupi 2006; 2012). This species is the principal responsible for myiasis in the Americas (Bernhardt et al. 2019).

A 78-year-old male farmer from San Andrés Paxtlán, Oaxaca, Mexico, with a history of chronic alcoholism, presented to a healthcare facility with soft tissue necrobiosis and myiasis of the left foot at May 15th 2026. Upon admission, the patient was conscious and oriented but exhibited anxiety symptoms associated with alcohol withdrawal. During the diagnostic workup, diabetes mellitus was ruled out, and the hyperglycemia observed at admission was determined to be secondary to the acute infectious and inflammatory process.

The patient reported that the condition initially began as a small wound on the ankle approximately two months prior to presentation, for which no medical attention had been sought. The wound failed to heal, a situation of which his family members were not fully aware. Physical examination revealed a foul-smelling lesion of the left lower extremity extending from the distal third of the leg to the distal third of the foot, without involvement of the toes. The lesion exhibited edematous margins, extensive necrotic and sloughing tissue, purulent discharge, and myiasis, with exposure of tendons, muscle, and bone tissue (Fig. 1).

Under regional anesthesia, extensive surgical irrigation, debridement of necrotic tissue, and mechanical removal of the larvae were performed. Intraoperative examination revealed larval infestation not only within devitalized tissue but also in cavities extending into adjacent viable tissue. Following completion of the surgical procedure and optimization of the wound bed, negative-pressure wound therapy (NPWT) was initiated.

Following the procedure, the patient was admitted to the inpatient ward for continued multidisciplinary medical management. Pharmacological treatment consisted of broad-spectrum antibiotic therapy with clindamycin (600 mg intravenously every 8 hours) and levofloxacin (750 mg intravenously every 24 hours), analgesic therapy with ketorolac (30 mg intravenously every 8 hours), and maintenance intravenous fluid therapy.

During his five-day hospital stay, the patient showed favorable clinical progression, remaining hemodynamically stable, afebrile, and with adequate metabolic control. Upon meeting the criteria for clinical improvement, he was discharged from the hospital.

A total of 12 third instar larvae were recovered from the wound and preserved in 10% formalin for subsequent analysis. The larvae were identified following Prado et al. (2023) key and were mainly identified based on posterior spiracle characteristics (Fig. 2D), length of dorsal and ventral papillae (Fig. 2C), and the spines pattern of anal division (Fig. 2C).

After 16 days of treatment with calcium alginate dressings containing silver (Sorbagon AG), the wound showed improvement. However, episodes of alcohol withdrawal occasionally led him to remove the bandage and dressings (Fig. 3).

Cochliomyia hominivorax has previously been recorded in the Mexican states of Veracruz, Tamaulipas, Yucatán, and Chiapas (Jaume-

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Schinkel & Ibáñez-Bernal 2020). This new record from Oaxaca expands the known distribution of this species in Mexico. In addition, this report represents the first documented case of human myiasis caused by *C. hominivorax* in Oaxaca and provides new epidemiological data for the region. Notably, this case coincides with the reemergence of myiasis caused by *C. hominivorax* in Mexico, ending the disease-free period that began in May 2019, when National Service for Agri-Food Health, Safety and Quality (SENASICA) declared the country free of this condition to the World Organization for Animal Health (WOAH) (SENASICA 2026).



Figure 1. Initial clinical appearance of the left foot lesion at the time of admission, showing areas of necrosis, sloughing tissue, and active myiasis.

Myiasis associated with neglected chronic wounds in vulnerable patients remains a significant clinical challenge and highlights the importance of early diagnosis and multidisciplinary management. Previous studies have shown that myiasis caused by different fly species is often associated with vulnerable patients and chronic wound conditions (Sherman 2000; Francesconi & Lupo 2012; Martins et al. 2021; Espinosa et al. 2022).

Our findings match those reported by Sherman (2000): many affected individuals had risk factors such as homelessness, alcoholism, poor hygiene, and chronic wounds, which may increase exposure to flies and facilitate oviposition. Additionally, diabetes and peripheral vascular disease were common among patients with wound myiasis, likely due to their association with chronic, non-healing wounds that predispose individuals to infestation. Elderly individuals constitute another susceptible population, particularly those with diabetes, limited mobility, poor hygiene, or restricted access to healthcare services (Sherman 2000; Francesconi & Lupo 2012; Espinosa et al. 2022). In this case, alcohol use disorder was an important contributing factor to the development of the infestation and delayed the pursuit of medical care, resulting in a lack of timely treatment.

Martins et al. (2021) identified three important factors associated with myiasis caused by *C. hominivorax* and other species, including advanced age, the presence of predisposing conditions such as pre-existing wounds, residence in areas with inadequate sanitation and waste management, and exposure to environments where myiasis-causing flies species are present. Most of these factors were observed in the present case. Although the patient did not reside in an area with inadequate sanitation, he presented alcohol use disorder and poor personal hygiene, both of which may have contributed to the development of the infestation.

Accurate taxonomic identification is clinically important because myiasis treatment is species specific (Robbins & Khachemoune 2010). The development of additional taxonomical tools, such as the interactive identification key for third instar larvae of Neotropical Calliphoridae proposed by Prado et al. (2023), are needed for other geographic regions and their respective fauna. Furthermore, expanded faunistic surveys are required to better understand the distribution of species with myiasis causing potential, improving both diagnostic accuracy and epidemiological knowledge.

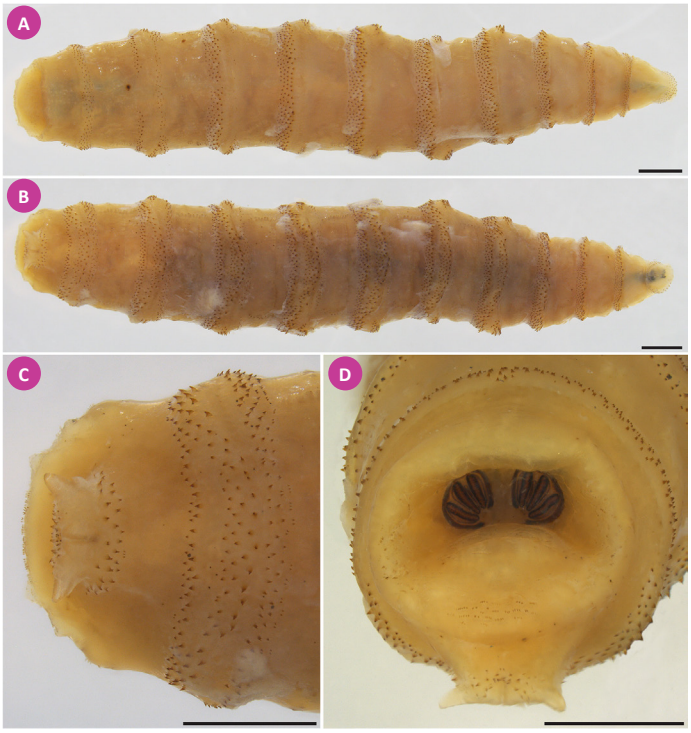


Figure 2. Larva of *Cochliomyia hominivorax* (Coquerel, 1858) (Diptera: Calliphoridae): (A) dorsal view. (B) ventral view. (C) anal division. (D) posterior spiracle. Scale bar: 1.0 mm.



Figure 3. Appearance of the wound after 16 days of treatment with a calcium alginate dressing containing silver (Sorbagon AG).

In the present case, the lesion exhibited extensive necrotic and sloughing tissue, purulent discharge, and exposure of tendons, muscle, and bone tissue, indicating severe local tissue damage. These findings highlight the importance of prompt diagnosis for the effective

management of myiasis, as early recognition and treatment can limit extensive tissue destruction and reduce the risk of complications, including secondary bacterial infection (Robbins & Khachemoune 2010; Francesconi & Lupi 2012).

Similarly to the present case, Espinosa et al. (2022) reported clinical improvement in an elderly neglected patient with *C. hominivorax* myiasis following surgical debridement, larval removal, and treatment with invermectin and antibiotics.

This report represents the first documented case of human myiasis caused by *C. hominivorax* in Oaxaca, Mexico. The findings highlight alcohol use disorder and neglected wounds as important risk factors and emphasize the need for early diagnosis and treatment. Continued surveillance and reporting of new cases are essential to improve understanding of the epidemiology of this species and its recent reemergence in Mexico.

Authors' Contribution

AFM: Conceptualization, Investigation, Writing – original draft, Writing – review & editing; JJJM: Investigation, Methodology, Writing – original draft, Writing – review & editing; JRFD: Investigation, Methodology, Writing – original draft, Writing – review & editing; BHZN: Investigation, Methodology, Writing – original draft, Writing – review & editing; LRPG: Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing.

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Conflict of Interest Statement

The author declare no competing interests.

Ethical Approval

Not applicable (case report).

Data Availability

All the supporting data are available within the published study.

Generative AI Statement

No AI tools were used in the present study.

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