



Multimodal Management of Oral Myiasis in a Patient with Polio-Induced Disability: A Case Report

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(Received: 16 March 2025

Revised: 20 April 2025

Accepted: 01 May 2025)

KEYWORDS

Turpentine Oil,
Oral Myiasis,
Ivermectin,
Parasitosis.

ABSTRACT:

Oral myiasis is a rare parasitic infestation caused by the larvae of dipterous flies, typically occurring in individuals with compromised health or poor hygiene. The treatment is mechanical removal of maggots along with systematic treatment with ivermectin, a semi-synthetic macrolide antibiotic, have been used for treatment for oral myiasis. This case report presents the clinical management of a 35-year-old non-ambulatory female patient with oral myiasis, secondary to neurological impairment due to polio, and associated with severe oral neglect. Diagnosis was established based on clinical presentation and confirmed by identification of maggots in the oral cavity. Management involved the topical application of turpentine oil to facilitate larval removal, followed by surgical debridement under local anesthesia. Subsequent wound care included repeated debridement, topical treatment, and eventual surgical closure. Ivermectin proved to be safe and effective, adjunct therapy and preventive care through maintenance of oral hygiene and regular dental follow-ups are essential, especially in neurologically impaired individuals. The report also reviews the classification, pathogenesis, and therapeutic strategies of oral myiasis, highlighting the need for awareness among healthcare providers to avoid serious complications such as tissue necrosis and systemic infection.

1. Introduction

The term myiasis is derived from Greek words “muia” and “iasis” which means “fly” and “disease” respectively¹. Term myiasis was coined by Hope in 1840 and first described by Laurence in 1909². German entomologist Fritz Zumpt defined myiasis as “the infestation of live human and vertebrate animals with dipterous larvae, which at least for a period, feed on the host’s dead or living tissue, liquid body substances or ingested food”¹.

In the head and neck region, the sites most affected by myiasis are the ears, eyes, oral cavity, nose, paranasal sinuses, lymph nodes, mastoid region and tracheostomy wound⁹. Oral myiasis is a rare condition and can be caused by several species of Dipterian fly larvae and may be secondary to serious medical condition. Incidence of oral myiasis is comparatively lesser than that of

cutaneous myiasis as oral tissue are not permanently exposed to the external environment².

The sequelae of myiasis include blindness, hearing loss and even death. Thus, immediate treatment is essential. Since no standard protocol exists for the treatment of myiasis, different techniques are adopted.

We present a case report of a patient with oral myiasis treated successfully with surgical debridement and oral Ivermectin.

2. Objective

The objective of this case report is to evaluate the efficacy of turpentine oil and oral ivermectin in the management of oral myiasis.

3. Case Report

A 35-year-old female patient was brought to the Department of Oral and Maxillofacial Surgery by her



parent with a chief complaint of pain and swelling in the upper front region for 4-5 days. The parents reported the presence of worms in the mouth in the past 3 days. Patient was diagnosed with polio infection since birth and non-ambulatory since then. Patient was not oriented to time, place and had multiple bed sores in her back region. Intra oral examination revealed poor oral hygiene, halitosis and generalized chronic periodontal disease. In the premaxilla, on the palatal aspect, a 2x1 cm wide, ulcerated lesion with multiple worms like motile organism was noted extending from incisive papilla to distal surface of canine in the right side. Furthermore, in the mandible, on the buccal aspect, a 1x1 cm wide, oval, ulcerated lesion with multiple white worms like motile organism was noted (**Figure. 1**). Grade 1 mobility with respect to 43 and grade 2 mobility with respect to 11,12,21,22 was noted.

Based on the history and presence of maggots, provisional diagnosis of oral myiasis was given. Removal of the maggots and serial debridement of the wound with topical application of turpentine oil was planned.

Under local anaesthesia, surgical debridement was done with saline betadine irrigation and turpentine oil was applied topically over the intraoral wound with cotton swab for 2 minutes and thirty live maggots that had infested the wound were removed (**Figure 2**).

Patient was prescribed with Tab. Doxycycline 100mg and Tab. Metronidazole 400mg and Tab. Ivermectin 6mg with adequate rehydration. Patient was recalled on third day, wound debridement with topical application of turpentine and the maggot's removal was done. The surgical site was allowed to heal by secondary intention (**Figure 3**). The surgical site was inspected after 2 weeks, and formulation of granulation tissue was noted and hence the surgical site was primarily closed (**Figure 4,5**). During the follow-up period, the patient's recovery was uneventful and showed good healing of the wound (**Figure 6**).

4. Results

Following the initial clinical diagnosis of oral myiasis, immediate mechanical extraction of the maggots was undertaken following topical application of turpentine oil.

The patient responded well to the intervention performed under local anaesthesia. Postoperative wound management involved the continued application of turpentine oil and serial debridement at three-day intervals. In addition, systemic pharmacological therapy was initiated, consisting of doxycycline (100 mg), metronidazole (400 mg), and a single oral dose of ivermectin (6 mg), aimed at controlling secondary bacterial infection and supporting parasitic eradication.

By the end of the second week, marked clinical improvement, characterized by the cessation of larval activity, a significant reduction in local inflammation, and the development of healthy granulation tissue was observed. The surgical site was subsequently closed using primary suturing techniques. Follow-up evaluation two weeks post-suturing revealed complete and uneventful wound healing, with no evidence of reinfestation or residual infection.

The integration of ivermectin as an adjunct to conventional mechanical and topical therapy proved effective in achieving full resolution of the infestation and promoting satisfactory tissue healing.



Figure 1: Intraoral view of ulcer with presence of large number of larvae in the palate.



Figure 2: Larvae removed from the oral cavity during the first visit, following turpentine oil application.



Figure 4: After 2 weeks, formation of granulation tissue with no maggots.



Figure 3: Larvae removed from the oral cavity after 3 days following turpentine oil application.



Figure 5: Primary closure.





Figure 6: Satisfactory healing of the surgical site after 4 weeks

5. Discussion

Oral and maxillofacial myiasis is an uncommon condition resulting from infestation by Diptera flies, which deposit their eggs or larvae in food, necrotic tissue, open wounds, or even on intact mucosal surfaces³.

Larvae of the common housefly, *Musca domestica* (Indian housefly), have been found in neglected wounds. Adult female flies typically deposit their eggs or larvae on exposed food, necrotic tissue, or open wounds. A warm, humid climate combined with non-healing wounds and foul odor (halitosis) provides an ideal environment that attracts these flies. The eggs hatch within 24 hours, and the emerging larvae secrete toxins that degrade host tissue in a characteristic screw-like manner, feeding on viable tissue. Proteolytic enzymes produced by surrounding bacteria further break down the tissue, facilitating larval nutrition. Within 5 to 7 days, the larvae complete their development, exit the wound, and drop to the ground to undergo pupation⁵.

According to Abdo et al., myiasis can be classified into two main types: obligatory, in which larvae develop within viable, living tissue; and facultative, where maggots feed solely on necrotic tissue⁵. Yazdi proposed a classification based on anatomical location, identifying six categories: dermal and subdermal myiasis, facial cavity myiasis, wound or traumatic myiasis, gastrointestinal myiasis, vaginal myiasis, and generalized myiasis. Furthermore, based on the condition of the affected tissue and the mode of larval entry, myiasis is categorized as accidental (resulting from

ingestion of contaminated food), semi-specific (where larvae are deposited on necrotic tissue within existing wounds), and obligatory (where larvae invade and damage previously healthy, intact skin)⁵.

Higher disease frequency is observed in patients with altered psychological profiles or neurological conditions, particularly those with predisposing clinical factors such as lip incompetence, mouth breathing, anterior open bite, mechanical ventilation, or untreated wounds that did not receive prompt and proper care³.

The diagnosis of oral myiasis is typically straightforward and should be made early to prevent involvement of deeper tissues. Destructive complications, such as palatal perforation and extension to deeper spaces, can occur; thus, a CT scan is recommended when these complications are suspected⁶.

The standard treatment for myiasis involves manual removal of the larvae, which may be combined with topical and systemic asphyxiating agents that encourage the larvae to emerge. However, the most common approach is mechanical removal of all larvae, followed by daily wound debridement and irrigation. An alternative treatment involves creating an anaerobic environment within the wound to either kill or expel the maggots. Turpentine solution can also aid in the extraction of the larvae⁴. In two cases, the topical application of Nitrofurazone (0.2%, 20ml) to the infested wound three times daily for a duration of three days demonstrated successful outcomes⁴. Duque et al. treated oral myiasis using subcutaneous ivermectin, alongside a phenol mixture (10% creolin) as a local measure to control the larvae¹⁴.

Ivermectin is a semi-synthetic macrolide antibiotic derived from *Streptomyces avermitilis*. Its use is well-established in large animals for the management of gastrointestinal and pulmonary parasitosis, as well as infestations by crab lice and larvae of flies¹⁶.

Ivermectin is believed to block nerve impulses at the nerve endings by promoting the release of gamma-aminobutyric acid (GABA), which binds to receptors, leading to paralysis and death of the parasite. When administered at the recommended dosage, it does not affect acetylcholine, the primary peripheral neurotransmitter¹⁶.



6. Conclusion

In our case, the development of maggots was facilitated by inadequate oral hygiene in medially compromised patient, highlighting the need for regular medical and dental examinations in debilitated patient.

Mechanical removal of the maggots was performed after the application of turpentine oil and wound debridement was conducted every third day, followed by primary closure once no maggots were present.

The addition of Ivermectin along with debridement is efficient and safe method of treatment of parasitosis and the present report describes its use in human oral myiasis.

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