

Oral Myiasis in Anterior Palate - A Rare Case Report & Review of Literature

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DOI: <https://doi.org/10.52403/ijrr.20240825>

ABSTRACT

Oral myiasis was coined by Reverend F. William Hope in 1840. It is a rare pathology and risk to the patients in humans suffering from myiasis. It has a higher incidence in rural areas and in developing countries having hot climatic conditions such as tropical and sub-tropical zones of Africa and America. Most of the infestations are associated with various predisposing factors such as poor oral hygiene, suppurative lesions, senility, alcoholism, and debilitating conditions and reported in post-extraction socket, trauma. The diagnosis is made basically by the presence of maggots. This article deals with oral myiasis in cerebral palsy female patient. The treatment consisted of manual removal of the maggots by topical application of turpentine oil and surgical debridement of the wound

Keywords: Diptera fly, human myiasis, ivermectin, musca domestica, myiasis, parasitic infection

INTRODUCTION

The term myiasis was first coined by "Reverend Frederick William Hope" in 1840 and it originates from a Greek word "myia" meaning fly. Oral myiasis was first described in the literature by "Laurence" in

1909. It was defined by "Zumpt" as the infestation of live human and vertebrate animals with dipterous larvae, which feed at least for a certain period, on the host's dead or living tissue, liquid body substances, or ingested food.¹

Myiasis is an infestation in the humans or animal tissue caused by the fly larvae that evolves into a parasite.² Almost 86 different species of flies belonging to the order, "Diptera" has been reported to cause myiasis in humans.³ Primary myiasis is more commonly seen in cattle and livestock affecting living tissue (caused by biophagous larvae also called obligatory myiasis). Secondary myiasis is caused by flies that feed on dead tissue (caused by necro biophagous larvae also called facultative myiasis). This is more commonly seen in humans with necrotic tissue.¹

In humans, myiasis is reported in individuals with poor personal hygiene, immunocompromised, and of lower socioeconomic status. The most common anatomical sites involved in myiasis are nose, eyes, lungs, ears, anus, vagina, and more rarely, the mouth.⁴ The incidence of oral myiasis is less, as compared to cutaneous myiasis since the oral tissues are not permanently exposed to the external environment.³



Fig: 1: Palatal mucosa hanging from anterior palate

CASE REPORT

A 56-year-old female patient with cerebral palsy was referred to the department of oral and maxillofacial surgery with the complaints of swelling and pain in the upper front teeth region for the past 7 days. Informed consent was obtained from her son. The patient was from a low socioeconomic background and taken care of by her son. Intraoral examination revealed ulceration on the anterior palatal gingiva of the hard palate extending from 15 to 24 with bleeding. Closer observation revealed the crawling of maggots on the palatal aspect. There was a separation of mucoperiosteum of palatal mucosa with burrows and tunnels. She had persistent mouth opening and poor oral hygiene. Routine blood investigation was within the normal limits except eosinophil and total leucocyte count. Based on the presence of maggots and medical history, the

provisional diagnosis of oral myiasis was performed. Patient was admitted. Ryles tube feeding started and IV channel established. Next day Gauge impregnated with turpentine oil was placed at the orifice for approximately 5 min. The maggots were removed mechanically with tissue holding forceps under local anaesthesia spray. Suctioning was done parallelly. Later, couple of days almost 45–50 maggots were removed and taken for entomological study and most of them were incinerated. The same procedure was continued for the next 7 days. Antibiotic therapy was started with ceftriaxone intravenous (IV) every 12 h, IV metronidazole 500 mg TDS (3 times a day), and 6 mg ivermectin and repeated for 5 days. After 7 days of hospitalization, the patient was discharged when there were no larvae. The wound healing was complete in 1-month follow-up.



Fig: 2: Turpentine oil soaked gauge removed. Maggot removal started



Fig: 3: Maggot Removal Done

DISCUSSION

Parasitosis is a parasitic infection or infestation in which a person is infected or infested with parasites. Infestations were first documented in 1840, with open wounds and dead tissue serving as the principal sites of infection as well as the involvement of body cavities such as the ear, nose, and oral cavity.² Oral myiasis is a secondary, unpredictable condition caused by the invasion of such parasites by live fly larvae.

Shira documented the first instance of oral myiasis in 1943, and Lim conducted a literature analysis of this illness in 1974.⁵ The most prevalent causative species of oral myiasis are divided into four families: Calliphoridae, Sarcophagidae, Oestridae, and Muscidae.⁶ The most prevalent larval species that cause myiasis in India belong to the Muscidae family, particularly *M. domesticus*, also known as the housefly.

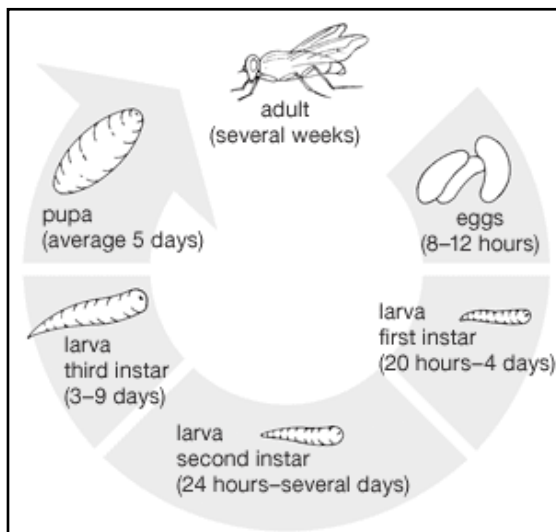


Fig: 4: Life cycle of a FLY

The life cycle of the fly starts with an egg followed by the larval stage, pupa, and finally, the adult fly.⁵ The egg hatches in 12–18 h. During the first and second stage, the larva has segmental hoods which are directed backward. The hook helps the larva to anchor themselves to the surrounding tissue. The presence of these hooks makes the removal of the larva from its host difficult. The larvae reach the prepupal stage (third instar stage) in 8–12 days. They wriggle and fall to the ground to pupate. The larval stage lasts for about 6–8 days, during which they are parasitic to humans. The pupa stage is temperature dependent with growth favoured by warm weather. The adult fly emerges in the next 1 week–2 months, depending on the temperature. The burrowing of larvae causes separation of the mucoperiosteum from the bone. The opening of the burrow with induration of the marginal tissues forms a dome-shaped

“warble.” The posterior spiracles are exposed to open air for respiration such that their head is positioned downward. They are photophobic. They tend to hide deep into the tissue with a suitable niche for development into a pupa.⁷ As larvae have a strong preference for warm and humid temperatures, tropical conditions promote their growth; therefore, these conditions are restricted to tropical and subtropical locales.⁸ People who are unwell, mentally challenged, or elderly are more likely to develop myiasis because they rely on their families for everyday duties. As a result, the caregivers must be aware of how to detect, avoid, and manage sickness. Poor oral hygiene, as well as other predisposing conditions such as poor nutrition, decreased body resistance, alcoholism, neurological disorders, oral and maxillofacial trauma, mouth breathing, incompetent lips, or inability to close the lips due to

malocclusion, are just a few of the factors that attract flies for larval deposition.⁹⁻¹¹

Maggots are conical in appearance, with a pointed anterior end that resembles a hook, and a blunt black posterior end that is sometimes misidentified as the eyes of the larvae. However, the black posterior end is the part through which the larvae breathe as they feed on the deep tissues, and is known as the spiracle, the larvae's respiratory apparatus. Due to her neurological state, the patient was fully dependent on her caregiver in this case, and this dependence, combined with poor dental hygiene, mouth breathing, and lip incompetence contributing to a lack

of lip seal, resulted in infestation of larvae in the oral cavity. Because she was unable to speak or articulate the symptoms of infestation due to aphasia, the caregiver observed the indication of abnormality in this case, which was pulsating live larvae in the oral cavity, a hallmark clinical sign of myiasis.^{12,13} The inability of the patient to and comply limits the professional's ability to intervene.¹⁴ Therefore, regular examination and evaluation of the oral cavity are needed as preventive measures to avoid the occurrence of such conditions or other oral pathologies in the future.



Fig:5: Maggot

Oral myiasis is classified into two categories based on the sequence in which it occurs: primary, in which the infection is confined to the initial site, such as in cases of palatal or maxillary sinus involvement; and secondary, in which the infection infiltrates from the primary site and lodges elsewhere. Primary myiasis occurs when larvae feed on living tissues, whereas secondary myiasis occurs when larvae feed on dead tissues.¹⁵ A classification system was developed based on the presence of larvae and their long-term survivability, with two basic categories: anatomical and ecological. The larvae are anatomically classified as migratory, furuncular, bloodsucking, sanguinivorous, cutaneous myiasis, cavitory myiasis, and wound myiasis.

There are three types of myiasis: 1) pseudo or accidental (ingestion of larvae with food),

2) obligatory or specific (affecting intact skin), and 3) facultative or semi-specific.¹⁶ Current literature reveals that oral myiasis is broadly classified into^{17,18}

1. Larvae were found to be active outside the body.
2. Larvae develop below the uninterrupted skin where they hide.
3. Larvae live in cavities in the urinary and gastrointestinal tracts.
4. Young larvae or eggs are deposited within wounds or normal cavities inside the body.

From the above-mentioned classification, the present case is related to the fourth variant of the classification system. Oral myiasis can be treated using several methods. The most common method is mechanical removal or surgical debridement of the larvae under local anesthesia

supplemented with appropriate antiseptics, antibiotics, or anthelmintic therapy. To eject maggots, chemicals such as turpentine oil, negasunt, ethyl chloride, ether, mercuric chloride, creosote, saline, iodoform, chloroform, clove oil, calomel, phenol mix, petroleum jelly, olive oil, gentian violet, camphor, and sodium hypochlorite were initially utilized.^{19,20} Aerobic larvae asphyxiate and migrate to the shallow region of the cavitations, which assists in the evacuation of these larvae with minimal injury to the tissues and larvae.²¹ After exposure, larvae were removed using haemostatic or clinical forceps. In this case, turpentine oil was used to remove larvae from the affected location. It causes reversible tissue necrosis, which leads to epithelial hyperplasia, hyperkeratosis, and ulceration, all which regress once the stimulus is removed.¹⁷ Turpentine oil is one such asphyxiating agent that acts as a topical irritant, blocking the larvae's respiratory sinuses, thereby making the larvae forcibly to come out in search of oxygen. This helps in the removal of the larvae with the help of forceps or tweezers. Usage of chemicals in suffocating or asphyxiating the larvae and removing them is also known as suffocation therapy. Also care should be taken to prevent the laceration or disruption of larvae as any remnants of larvae can lead to undesirable inflammation and further infection which in turn is difficult to manage. Ivermectin is a semi-synthetic macrolide antibiotic that produces gamma-aminobutyric acid, which attaches to larvae 'receptor and causes the organism to die.²² It is an anti-parasitic drug isolated from *Streptomyces avermitillis* that can be administered in 6 mg dose once a day or routinely for 3-5 days. Ivermectin use can cause dizziness, fever, migraines, muscular and joint pain, and cutaneous eruptions.²³ Ampicillin, augmentin, polymyxin B, and cefalosporin are examples of broad-spectrum antibiotics that can be administered alone or in conjunction with metronidazole.^{10,16}

CONCLUSION

Oral hygiene is an important aspect for individuals with intellectual and developmental disabilities, as they depend on their caregivers to provide it. Hence, knowledge of various normal and abnormal common oral conditions is necessary for caregivers to improve the quality of life of such patients. Proper training of caregivers can help them identify the oral conditions that require interventions at an early stage, which can help them to reduce or prevent common oral diseases such as gingival or periodontal conditions, thereby improving the overall health care of a vulnerable population. In addition, patient behaviour can also be a concern, as it creates an additional barrier for assessing dental care difficult for the dentist to carry out any dental treatment accordingly. Therefore, a collaborative approach between dentists and caregivers is required to benefit patients with intellectual or developmental disabilities.

Declaration by Authors

Acknowledgement: I wish to acknowledge my G.N.I.D.S.R OMFS Team

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Chayan Kumar Kundu, Siddharth Singh, Sudip Chakrabarty. Oral myiasis in anterior palate - a rare case report & review of literature. *International Journal of Research and Review*. 2024; 11(8): 227-232. DOI: <https://doi.org/10.52403/ijrr.20240825>
