

Case Series**Oral and maxillofacial myiasis: A case series****Kanchan Shah¹, Asma Fruitwala^{1*}, Aishwarya Salve¹, Jayant Landge¹, Anjali Meshram¹, Tejal Badhan¹ **¹Government Dental College & Hospital Chhatrapati Sambhajnagar, Maharashtra, India**Abstract**

Oral and maxillofacial myiasis is still a pathology common in humans. It is seen to be common in patients with poor oral hygiene, alcoholism, senility, severe uncontrolled physical or mental illness, suppurating lesions, severe halitosis, and other conditions. Here in this article, we present 3 cases of Myiasis of the oral and maxillofacial region. Myiasis is an uncommon illness mostly brought on by particular dipteran fly larvae invading tissue. Because the oral cavity rarely provides the essential habitat conducive to a larval lifecycle, oral myiasis is more "rare" and "unique." Poor dental hygiene, halitosis, trauma, senility, learning difficulties, and conditions that challenge one's physical and mental capacities are common predisposing factors. Treatment for oral myiasis is necessary right away since it can cause rapid tissue destruction and deformity. The course of treatment involves using chemical agents and then manually removing the maggots from the mouth cavity. The greatest ways to avoid oral myiasis are by good sanitation, personal and environmental hygiene and cleanliness, and special attention to those who are disabled.

Keywords: Oral myiasis, Oral hygiene, Ivermectin**Received:** 02-07-2024; **Accepted:** 21-02-2025; **Available Online:**

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For reprints contact: reprint@ipinnovative.com**1. Introduction**

The term myiasis was first proposed by Hope (1840) to refer to diseases of humans originating specifically with dipterous larvae. Myiasis is the infestation with dipterous larvae which for at least for certain period feed on the host's dead or living tissue or ingested food or other liquid body substances.^{1,4,5,6} Oral and maxillofacial region myiasis though is very uncommon in developed countries but is still an ongoing problem in developing countries like India. the occurrence of myiasis has been linked to humid and warm climates that favour the breeding of flies.^{2,3,4,5,6} There are several cases of it reported in India. It has been found commonly associated with poor oral hygiene, mouth breathing, anterior open bite, incompetent lips, facial trauma, oral carcinoma or any other suppurating lesions, alcoholism, senility, and severe uncontrolled physical or mental illness. The common anatomic locations on the face include the nose, oral cavity predominantly palate, tongue, and other sites like eye and ear.^{5,6,7,8}

There are two main systems for categorizing myiasis: anatomical and ecological classifications. The anatomical system of classification, first proposed by Bishopp, is considered useful for practical diagnosis and to classify the infestation in relation to the location on the host.

We will use the following classification, which is based in Bishopp's, James', and Zumpt's proposed classifications:

1. Sanguinivorous or bloodsucking
2. Cutaneous myiasis, furuncular and migratory
3. Wound myiasis
4. Cavitory myiasis, where the infestation receives the name of the affected organ, e.g., cerebral myiasis, aural myiasis, nasal myiasis, and ophthalmomyiasis.

Myiasis, a noun derived from Greek (mya, or fly), was first proposed by Hope to define diseases of humans caused by dipterous larvae, as opposed to those caused by insect larvae in general.¹ Myiasis has since been defined as the infestation of live vertebrates (humans and/or animals) with dipterous

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larvae.³ Recognized in ancient times, flies causing myiasis are still some of the world's most devastating insects, responsible for severe losses in animal husbandry, with significant economic losses, including reduced milk production, weight and fertility issues, and reduced hide quality.⁷ In mammals (including humans), dipterous larvae can feed on the host's living or dead tissue, liquid body substance, or ingested food and can cause a broad range of infestations, depending on the body location and the relationship of the larvae with the host.² The distribution of human myiasis is worldwide, with more species and greater abundance in poor socioeconomic regions of tropical and subtropical countries. In countries where it is not endemic, myiasis is an important condition, where it can represent the fourth most common travel-associated skin disease.⁵

1.1 Myiasis classification

There are two main systems for categorizing myiasis: anatomical and ecological classifications. The anatomical system of classification, first proposed by Bishopp, is considered useful for practical diagnosis and to classify the infestation in relation to the location on the host. Since a single species can be assigned to more than one anatomical location, and the same location can be infested by different species, a classification system based on the degree of parasitism shown by the fly is also used.

1.2 Anatomical classification of myiasis

The anatomical classification system is based on the one proposed by Bishopp, later modified by James and by Zumpt. Each of those authors used different terms with the same meaning, as shown in **Table 1**.

Table 1: Classification of myiasis

Classification by Zumpt	Classification by Bishopp	Classification by James
Sanguinivorous	Blood sucking	Blood sucking
Dermal/Subdermal	Tissue-destroying Subnormal migratory	Creeping Traumatic/wound Anal/vaginal
Nasopharyngeal	Infestation of head passages	Nose, mouth, sinuses Aural Ocular
Urogenital	Intestinal/urogenital	Anal/vaginal Bladder, urinary passages

To avoid confusion, we will use the following classification, which is based in Bishopp's, James', and Zumpt's proposed classifications:

- 1. Sanguinivorous or bloodsucking
- 2. Cutaneous myiasis, furuncular and migratory

- 3. Wound myiasis
- 4. Cavitory myiasis, where the infestation receives the name of the affected organ, e.g., cerebral myiasis, aural myiasis, nasal myiasis, and ophthalmomyiasis.

1.3 Ecological classification

Ecological classification takes into account the level of parasitism of the parasite and the host.(**Table 2**) When designing plague eradication programs for hospitals or nursery homes or in veterinary medicine, it is necessary to consider the ecological classification together with the specie life cycle.

Table 2: Ecological classification of myiasis

Ecological classification	Description
Specific/obligatory	Parasite dependent on host for part of its life cycle
Semispecific/facultative	
Primary	Free living and may initiate myiasis
Secondary	Free living and unable to initiate myiasis; may be involved once animal is infested by other species
Tertiary	Free living and unable to initiate myiasis; may be involved when host is near death
Accidental/pseudomyiasis	Free-living larva and not able to complete its life cycle; causes pathological reaction when accidentally in contact with the hos

The order Diptera is a large order of insects that are commonly known as true flies.The order Diptera is divided into two suborders, the Nematocera and the Brachycera.

To prevent myiasis, members of the public (especially caretakers of susceptible persons and staff of elderly homes) are advised to observe the following measures:

- 1. Maintain good personal hygiene
- 2. Proper wound management
- 3. Maintain good environmental hygiene and good ventilation
- 4. Fly-proof measures
- 5. Keeping of pet

2. Case Series

Here we present a series of cases where patients are affected with myiasis of the oral and maxillofacial region.

2.1 Case 1

The first case is of a 62-year-old female with ulcerated hard and soft palate with larval infestation. She gave the medical

history of a completely bedridden lifestyle after an accident and femur fracture. She also gave the history of diabetes. The oral cavity was thoroughly examined, which showed active and mobile larvae, and the clinical diagnosis of myiasis was made. (**Figure 1**) The patient was given a tetanus toxoid injection and maggots were removed mechanically after applying turpentine oil and protecting other oral sites with Vaseline-soaked gauze.



Figure 1: Case 1- myiasis of palat

2.2 Case 2

The second case is of a 31-year-old mentally retarded female with acute upper lip swelling with necrotic area and fetid odor patient. Error! Reference source not found. **a and b)** The patient had an incompetent upper lip. There was diffuse indurated swelling and ulceration. A clinical examination showed more than 100 maggots in the upper lip and corner of mouth.

2.3 Case 3

The third case is of a 53-year-old male patient with an extensive necrotic area in the right submandibular region and a fetid odor. (**Figure 2**) The patient gave a history of a contused, lacerated wound following trauma 20 days ago which was not cleaned or sutured. The patient was from a low socio-economic status and poor personal hygiene.

In both above cases thorough wound debridement was done with hydrogen peroxide soaked gauze and betadine solution and then the maggots were removed manually and local turpentine oil was used. Then the patient was prescribed Tab. Ivermectin 6 mg once daily and Tab Doxycycline 100mg twice daily and Tab Metronidazole 400mg thrice daily. Larvae parasitic examination was not performed in these cases.



Figure 2: Case 3 myiasis of face and neck

3. Discussion

In developing countries, Myiasis occurs in patients with suppurative lesions, trauma history, extraction wounds, or poor oral hygiene. The main and gold standard management of it is the removal of maggots mechanically. And the local application of substances to ensure the complete removal of maggots. The next management method includes systemic antibiotic therapy. Thus its prevention can be done by proper education however in developing countries due to poor living standards and lack of knowledge it is predisposing to the occurrence of infestation.^{6,7,8}

4. Conclusion

People with low socioeconomic positions, those who don't maintain good hygiene, sick patients with mental illnesses, diabetics, and those with compromised immune systems are commonly affected by myiasis.^{7,8} Preventive measures, such as access to primary health care, safe water, proper drainage, and basic healthcare, are unquestionably essential in preventing occurrences like this one.¹⁰ Individuals who suffer from incapacitating conditions are at risk for developing oral myiasis, and family members and caregivers may find it difficult to prevent this condition in these patients, particularly if they do not cover their lips. The primary preventative strategies for this population include routine assessments of the oral health status of these patients and information and instructions provided to families, caregivers, and long-stay hospitals regarding oral and environmental care. Particular consideration must be given to the treatment of individuals with specific needs due to disabling illnesses or behavioral disorders (such as patients who abuse alcohol or illegal drugs). Basic health and personal hygiene practices can readily prevent the kind of issue that this study reports.^{7,8,9,10}

5. Source of Funding

None.

6. Conflict of Interest

None.

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How to cite: Shah K, Fruitwala A, Salve S, Landge J, Meshram A, Badhan T/ Oral and maxillofacial myiasis: A case series. *Journal of Orofacial and Health Sciences* 2025;12(1):75–78