

## Primary oral myiasis: A case report

Jyothi Sharma <sup>1</sup>, Gowda Panchaksharappa Mamatha <sup>2</sup>, Rachana Acharya <sup>3</sup>

(1) BDS, Post graduate student

(2) MDS, Professor

(3) MDS, Senior lecturer

Department of oral medicine and radiology, Darshan Dental College and Hospital, Udaipur, Rajasthan, India

### Correspondence:

Dr. Jyothi Sharma,

Department of oral medicine and radiology

Darshan Dental College and Hospital

Udaipur, Rajasthan, India. 313001

E-mail: docjyotia@yahoo.co.in

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### Abstract

Myiasis is the infestation of live human and vertebrate animal with dipterous larvae which feed on the host's dead or living tissue. A case of oral myiasis in the maxillary anterior region in a 42-year-old female with neurologic deficit caused by the larvae (maggots) of *Musca Nebulo* (Family Diptera) is reported. The treatment consisted of manual removal of the larvae by topical application of turpentine oil, oral therapy with ivermectin and surgical debridement of the oral wound.

**Key words:** Oral myiasis, parasitosis, common house fly, ivermectin.

### Introduction

The term myiasis is derived from Latin word 'muia' which means fly and 'iasis' means disease. It is a pathology caused by the larvae in human and animal tissue that evolve to a parasite. The term was coined by Hope (1) in 1840. Myiasis was defined by Zumpt (2) as the infestation of live human and vertebrate animals by dipterous larva, which at least for certain period feed on host's dead or living tissue, liquid body substances or ingested food.

Myiasis frequently occurs in rural areas infecting livestock and pets such as dogs and cats. In humans, myiasis prevails in unhealthy individuals frequently found in third world countries. Human myiasis is extremely rare in Europe and in the Northern hemisphere but it is not an uncommon parasitic infestation in the tropics and subtropics (3).

Myiasis can be classified clinically (4) as primary (larvae feed on the living tissue) and secondary (larvae feed on dead tissue). Depending on the condition (5) of the involved tissue into accidental myiasis (larvae ingested along with food), semi-specific (larvae laid on necrotic tissue in wounds) and

obligatory myiasis (larvae affecting the undamaged skin). Further classification can be based on the site (6) as cutaneous, external orifice, internal organs and generalized.

The most common anatomic sites for myiasis are the nose, eye, lung, ear, anus, vagina and more rarely, the mouth (7). Incidence of oral myiasis as compared to that of cutaneous myiasis is less as the oral tissues are not permanently exposed to the external environment (8).

Oral myiasis was first described by Laurence in 1909 (9). Conditions leading to persistent mouth opening along with poor hygiene, suppurative lesions, severe halitosis and facial trauma may predispose the patient to oral myiasis (10). It has been reported among epilepsy patients with lacerated lips following a seizure, incompetent lips and thumb sucking habits (11), advanced periodontal disease (12), at tooth extraction sites (13), fungating carcinoma of buccal mucosa (6) and patient with tetanus with mouth propped open to maintain his airway (14).

We present a case of oral myiasis in the maxillary anterior region in a patient with neurological deficit.

### Case report

A 42-year-old unmarried female with neurological deficit (hemiparesis) and of low socioeconomic status having poor living conditions presented to the department of Oral Medicine and Radiology Darshan dental college and hospital, Udaipur, Rajasthan, India with a complaint of swelling in the upper lip and presence of worms in the mouth as noticed by her family members since the day before. History revealed trauma to the face one month back leading to avulsion of the upper left anterior tooth.



Fig. 1. Extra oral appearance of the patient at presentation.



Fig. 2. Photograph showing the avulsed socket in relation to 21 and maggots visible in the orifice of socket.



Fig. 3. Photograph depicting the live maggots that were retrieved after application of turpentine oil.

Extra oral examination (Figure 1) revealed incompetent upper lip with a diffuse swelling in the same region. Intra oral examination revealed an empty socket in relation to 21 with bleeding from the adjacent gingival sulcus. A necrotic ulcer leading to exposure of the bone with moving worm like objects (maggots) deeply penetrated in the socket of 21 was noticed (Figure 2). A solitary soft and fluctuant swelling with a draining sinus was noticed on the palatal aspect of 21 region suggestive of palatal abscess. The patient had type II malocclusion and multiple diastemata in addition to poor oral hygiene, intense halitosis and advanced periodontal disease.

Based upon the history and presence of maggots, provisional diagnosis of oral myiasis was made.

Radiographic examination revealed generalized horizontal bone loss and hematological investigations were within normal limits.

Cotton bud impregnated with turpentine oil was placed at the orifice of the socket for approximately 10 minutes. 10-12 maggots were manually removed with the help of tissue holding forceps and taken for entomological examination (Figure 3). The same procedure was repeated for two more days. Further management included extraction of the periodontally involved teeth followed by curettage and placement of metrogl pack. Oral therapy with ivermectin 6 mg once daily for two days was advised.

### Taxonomy

Maggots were examined by a zoologist and revealed as house fly. They belong to Phylum: Arthropoda, Subphylum: Mandibulata, Class: Insecta, Subclass: Pterygota, Division: Endopterygota, Order: Diptera, Genus: Musca, Species: Nebulo (15)

### Discussion

Musca Nebulo is the commonest Indian housefly. They are seen in abundance in human dwellings and are very active during summer and rainy season (15). The life cycle of a fly begins with egg stage followed by the larvae, pupa and finally the adult fly. The conditions required for egg laying and survival of the larvae are moisture, necrotic tissue and suitable temperature. Thus wounds, open sores, scabs, ulcers contaminated with discharges facilitate the same.

The patient in the present case was of low socio-economic status having poor living conditions. Persistent mouth opening due to incompetent lips and class II malocclusion, with poor oral hygiene and advanced periodontal disease as seen in our case are the most commonly known predisposing factors for oral myiasis. In addition, the patient had neurologic deficit and was physically dependent on her relatives for day-to-day routine activities which could be thought of as a contributing factor to her neglected oral hygiene. Trauma to the upper anterior tooth leading to an empty socket in relation to 21 and gingival bleeding from the adjacent gingival sulcus along with the above

mentioned predisposing factors were thought to provide an ideal opportunity for the flies to lay eggs.

The developmental transition via the larval stage requires an intermediate host. An empty socket and existing periodontitis contributed for the mechanical support and suitable substrate and temperature for the survival of the larvae.

The stage of larvae lasts for six to eight days during which they are parasitic to human beings. The larvae have backward directed segmental hooks with which they anchor themselves to the surrounding tissue. They are photophobic and tend to hide deep into the tissues for a suitable niche to develop into pupa (16). The present case also showed the larvae burrowed deep inside the socket.

The presence of these hooks makes manual removal of larvae from the host difficult. So when multiple maggots are detected as observed in our case, elimination can be achieved with agents like turpentine oil or topical irritants such as ether, chloroform, olive oil, calomel, iodoform and phenol mixture.

These larvae release toxins to destroy the host tissue (17). Proteolytic enzymes released by the surrounding bacteria decompose the tissue and the larvae feed on this rotten tissue (18). The infected tissue frequently releases a foul smelling discharge (16). The necrotic ulcer with a palatal abscess and intense halitosis seen in the present case is suggestive of the destruction caused by toxins released by the larvae.

Treatment consisted of manual removal of maggots, broad spectrum antibiotics and oral therapy with Ivermectin. Ivermectin (4) is a semi synthetic macrolide antibiotic isolated from streptomyces avermitilis and has been found to be an efficient and safe method for treatment of myiasis.

## Conclusion

As the old saying goes "prevention is better than cure" the disease should be prevented by controlling fly population, maintaining good oral and personal hygiene such as reducing the decomposition odor, cleaning and covering the wounds and by educating the susceptible population where basic sanitation is meager. Special care needs to be taken in medically compromised dependent patients as they are unable to maintain their basic oral hygiene.

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