

# Oral myiasis: a rare entity

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**Abstract** Myiasis is the invasion of tissues and organs of human beings or other vertebrates by fly larvae. This phenomenon is well documented in the skin, especially among animals and people in tropical and subtropical areas.

When tissues of the oral cavity are invaded by the parasitic larvae of flies, this condition is called oral myiasis. Oral myiasis is a rare condition that can be caused by several species of dipteran fly larvae and may be secondary to serious medical conditions. We hereby report a rare case of oral myiasis involving the palate in a 58-year-old diabetic patient and discuss the management of the same.

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## Introduction

The term myiasis was first introduced by Hope FW in 1840 [1], and is derived from Greek word 'Myia' meaning fly. When tissues of the oral cavity are invaded by the parasitic larvae of flies, this condition is called oral myiasis [2]. Oral myiasis was first described by Laurance in 1909 [3]. Myiasis is the invasion or infestation of tissues and organs of human beings by fly larvae [4]. Larvae feed on living or dead host tissue for certain period of time. They may infest different parts of the body as seen in cutaneous, nasopharyngeal, aural, ocular (ophthalmomyiasis), wound, intestinal and urogenital myiasis [2]. Myiasis can be caused by several species; the three main families of flies involved in myiasis are the Calliphoridae (tumbu flies, screwworms, green bottles and bluebottles), Sarcophagidae (flesh fly) and Oestridae (warble flies and bottlefly). Larvae of the common housefly, *Musca domestica* have also been identified especially in neglected wounds. The common housefly is found worldwide. Its life cycle is similar to that of the Calliphoridae flies. The infestation of already existing wounds is referred to as traumatic myiasis [5].

There are two forms of myiasis: Obligatory, where the maggots require living tissues for larval development [6], and facultative, where flies opportunistically use necrotic wounds as a site in which to oviposit and incubate their larvae [5].

## Case report

A 58-year-old male patient reported to the Department of Oral Medicine, Diagnosis and Radiology with a complaint of a massive, painful swelling of upper left cheek and involving the eye since a period of 3 days.

The swelling started insidiously and increased to the present size. It was associated with fever since 2 days. On further questioning patient reported that extraction of his upper left back teeth was performed by a local dentist elsewhere 5 days back.

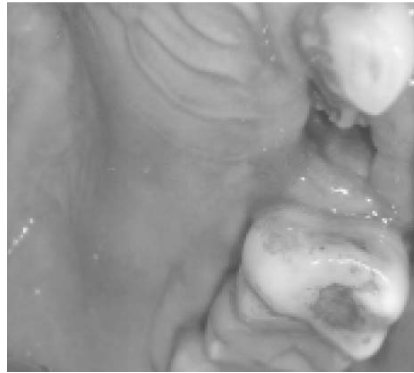
Patient was from a low socioeconomic background residing in rural area. His past medical history revealed that he was a known diabetic and hypertensive since 10 years and was not under regular medications. The medical records of the patient also revealed that the patient had suffered from mucormycosis of left nasal cavity and maxillary sinus 1½ years back for which a lateral rhinotomy medial maxillectomy and debridement was carried out. Extraoral examination revealed a diffuse swelling of middle third of left side of face extending superiorly to involve the eyelids and inferiorly, along the angle of the mouth. Skin over the swelling appeared stretched and erythematous (Fig. 1). Intraoral examination, revealed poor oral hygiene with severe halitosis. There was a non healing extraction site in the upper left

premolar region (Fig. 2). Rest of the mucosa appeared normal. Irrigation of extraction site was carried out to clear off debris during which maggots were coming out from the extraction wound raising a strong suspicion of a communication with the maxillary sinus, where these maggots would have harboured (Fig. 3). Around 8–10 maggots were removed with a blunt tweezers (Fig. 4). Based on the clinical findings of the presence of maggots a diagnosis of myiasis was made. A PNS view was taken to see the left maxillary bone and the sinus as there was a communication with the sinus. PNS view showed breach in the medial wall of left maxillary sinus, in distinct superior wall which was due to the previous surgery the patient had undergone for mucormycosis (Fig. 5). Hematological analysis revealed random serum blood sugar level of 250mg/dl indicating he was diabetic and the Elisa test for HIV was negative.

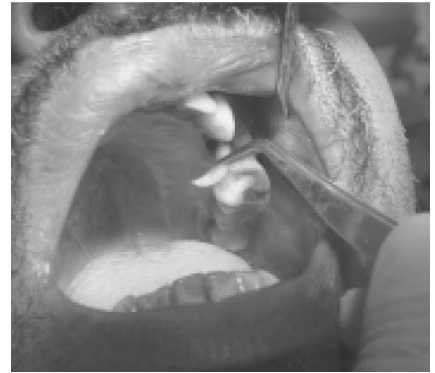
The patient was advised for systemic review by physician and was administered human insulin injections and antihypertensive drugs. The myiasis was treated with third generation cephalosporin 1 gm and Metronidazole 100ml IV injections with Diclofenac sodium injection for 7 days. At the same time, cotton soaked in turpentine oil was placed in the communication to remove the remaining maggots and this was repeated for 4 days. The larvae recovered from wound were



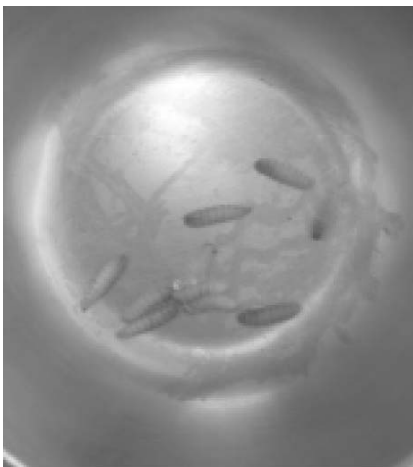
**Fig. 1** Extra-oral view of patient



**Fig. 2** Intra-oral view of non healing extraction wound



**Fig. 3** Maggot being removed from extraction site



**Fig. 4** Collected larvae



**Fig. 5** PNS view of left maxillary sinus



**Fig. 6** Postoperative extra-oral view after one week



**Fig. 7** Intraoral view after one month period



**Fig. 8** Left hemimaxillectomy specimen



**Fig. 9** Postoperative intra-oral view after 6 months of follow up



**Fig. 10** Fabricated obturator



**Fig. 11** Extra oral view of patient with obturator in place

preserved in formaldehyde (40%) and were identified as larvae of *Musca Domestica*. A week later, patient was advised to continue antibiotics and analgesics orally for 5 more days along with human insulin injections (Fig. 6). The patient was asked to report back after a week to evaluate the healing status, but unfortunately failed to do so.

After a period of one month patient reported back with the complaint of difficulty in eating, regurgitation of fluids through nose and severe halitosis. On

examination there was an area of necrosis involving left maxillary gingiva exposing the underlying necrotic bone (Fig. 7). Due to severe necrosis of tissues and the bone, left hemimaxillectomy was carried out as the treatment of choice and the patient was kept under close observation (Fig. 8). The postoperative healing was uneventful over a 6 months period of follow up (Fig. 9). An obturator was fabricated to cover the surgical defect area with which the functions were rehabilitated (Figs. 10, 11).

## Discussion

Myiasis has been defined by Zumpt 'as the infestation of live human and vertebrate animals with dipterous larvae which at least for a certain period feed on the host's dead or living tissue, liquid body substance or ingested food' [7]. Myiasis occurs more commonly in rural area than in urban [8] and predisposing factors may be medical conditions like diabetes mellitus, psychiatric illness, leprosy, mental retardation, patients with an open wound, those who are mouth-breathers, drunkards, senile or the hemiplegic [2]. Other risk factors may be poor oral hygiene, facial trauma, suppurative lesions [9]. Myiasis has also been described following teeth extraction [10]. In the present case, the patient was diabetic from a low socio-economic background residing in a rural area having poor oral hygiene with a past history of mucormycosis and also a history of tooth extraction which were identified as the predisposing and contributing factors to it.

Myiasis is caused by members of the diptera fly family that lay eggs or larvae on food, necrotic tissue, and open wounds [6]. The flies lay over 500 eggs at a time directly over the diseased tissue. In the present case it is presumed that the eggs were deposited in the wound directly by the flies. The warm humid climate, non healing wound with halitosis attract the flies to lay eggs in it.

The egg hatch in less than one week and the life cycle is completed in about 2 weeks [11]. The larvae obtain their nutrition from surrounding tissues and burrow deeper into soft tissues by making tunnels separating the gingiva and mucoperiosteum from the bone [12]. The larvae are tapered in shape and greyish white in color with transverse rows. They are short, stout, light brown/black tipped posteriorly and directed

spines along the tapering body [13]. In the reported case the larvae was of *Musca domestica* (house fly) whose life cycle is similar to Calliphoridae family [5]. The patient usually presents due to pain, swelling and discomfort [13]. Intra-orally swelling may be seen involving the lips, anterior portion of the hard palate [1]. The swelling may be associated with ulcer where the larvae harbour themselves [9,12]. In the present patient a non healing extraction wound was seen in the posterior part of the hard palate.

The simplest option for treating myiasis is the mechanical removal of the larvae with tweezers, usually under local anesthesia [14]. When tissue destruction is present surgical exploration should be carried out complemented by treating the defect with ether or a comparable solvent like turpentine oil, iodoform, chloroform, ethylchloride, etc capable of irritating the parasites and forcing them out of hiding [1]. Recently Systemic ivermectin has been tried out with favourable results [15,16]. Ivermectin is a semi-synthetic agent of the macrolides family that is derived from a group of natural substances - avermectin - which is obtained from actinomycetes. It is given orally in just one dose of 150–200 mg/kg body weight [14]. However in the present patient mechanical removal of larvae and application of turpentine oil along with surgery to remove the necrotic tissues and bone was considered appropriate for the patient.

## Conclusion

Although oral myiasis is an uncommon condition, the clinician should be aware of this phenomenon especially when the individual is from a socio-economically disadvantaged region that has less developed public health standard and with an immunocompromised condition like diabetes. Hence necessary protocols must be followed when managing such patients in the dental office like antibiotic coverage before any minor surgical treatment like extraction and maintenance of good oral hygiene.

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