# Traumatic Wound Myiasis in Maxillofacial Region - A Case Report

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#### Abstract

Compromised health and hygiene can lead to many complications and one among them is traumatic wound myiasis. Myiasis is the invasion of living tissues by larvae of flies. A case of traumatic orofacial wound myiasis in a 65 yr old female caused by larvae of Musca Domesticus and treated by manual removal of larvae is reported.

**Key words:** Traumatic wound, Primary Myiasis, Maggots, Domestic Fly, Turpentine Oil. Received on: 04/01/2010 Accepted on 06/03/2010

#### Introduction

Every human tries to maintain personal hygiene to an extent that his surrounding environment allows. But sometimes it may not be possible to maintain basic cleanliness by neglected, poor, old, debilitated and disabled ones. This group is more prone to wound infections and when not cared adequately, can lead to complications. One of such complication can be 'myiasis'.

Myiasis is a rare condition refers to the invasion of living tissues by fly larvae. 'Myiasis' word was coined by Hope in 1840 and is from the Greek 'myia' means 'fly'<sup>1</sup> Zumpt defined myiasis as 'the infestation of live human or vertebrate animals with larvae of the insect order Diptera (flies), which feed on living or necrotic tissues.<sup>2</sup> Human myiasis is mainly found in tropical and underdeveloped countries, however not uncommon in other areas.<sup>3-8</sup>

Myiasis can be classified depending on the condition of the involved tissue as i) Accidental myiasis; when larvae get ingested along with food, ii) Semi specific myiasis; when the larvae are laid on necrotic tissue of the wound and iii) Obligatory myiasis; in which larvae affects undamaged skin<sup>9</sup>. Based on anatomic site it can be classified as i) Cutaneous myiasis, ii) Myiasis of external orifices and iii) Myiasis of internal organs<sup>10</sup>. Clinically it can be classified as i) Primary and ii) Secondary<sup>11</sup>. Primary myiasis is caused by biophagous larvae (feed on living tissues) and also called as obligatory myiasis. Secondary myiasis is caused by the necrobiophagous larvae (feed on dead tissues) and also called as facultative myiasis.<sup>6,8,12,13</sup>

The most common anatomical sites for myiasis are the skin wounds, nose, sinuses, eyes, lungs, ears, anus, vagina and rarely the oral cavity.<sup>14</sup> Where as cutaneous myiasis involves invasion of the skin through the wounds. But specific types of flies can even penetrate healthy skin and produce myiasis.<sup>8</sup>

Oral myiasis though a rare condition was described in the literature since 1909 by Laurence.<sup>4,15</sup> The common predisposing factors for oral myiasis are the conditions leading to persistent mouth opening along with poor oral hygiene, infections, ulcerative lesions, facial trauma<sup>7</sup> and carcinoma.<sup>12,16</sup> Most of the patients are being senile,<sup>17</sup> alcoholics, mentally handicapped,<sup>5</sup> cerebral palsied<sup>5,8,11,17</sup> and also reported to be seen in patients living in poor conditions with no age limitations.<sup>6</sup> Droma EB<sup>4</sup> et al, in their literature review have mentioned that incidence of myiasis is more in anterior maxillary region and men are more affected than women.

Traumatic wounds in orofacial region when neglected by patients themselves and as well as care takers can lead to development of myiasis.<sup>2,7,18</sup> The present report describes a case of traumatic orofacial wound myiasis in an old patient presented along with a symphysis fracture

# **Case Report**

A 65yr old female was referred to Department of Oral and Maxillofacial Surgery from a Primary Health Center (PHC) after preliminary treatment for an assault injury, which occurred 5 days back. Wound of the lower lip was associated with pain and swelling in the chin region since 5 days. There was a history of bleeding from oral cavity and chin region for which suturing was done followed by dressing and tetanus toxoid injection. Later patient was referred for the fracture management.

On general examination, patient was weak and dehydrated with sluggish motor coordination. The wound dressing was unhygienic and was not changed since it was placed. Extraoral examination revealed diffuse swelling of lower lip and chin. Upon removal of damp dressing a lacerated wound of size 4x5 inches in maximum dimension was noticed below the vermillion border on left side. The wound was wet and was associated with bad odor. Primary cleaning of the wound was incomplete and wound margins were not approximated properly. On intraoral examination there was hematoma on the lingual aspect of the lower lip and deep laceration in the labial vestibule. Upon palpation, mobility of the fracture fragments in the mandibular symphysis region was felt. As preliminary treatment, the wound was cleaned with simple betadine solution and new dressing was placed with betadine ointment. Patient was hospitalized and subjected to routine blood and radiological investigations. She was put on IV fluids and systemic antibiotics. Radiographs revealed oblique fracture of mandibular symphysis. Surgical reduction and fixation was planned under general anesthesia.

Same day late evening, patient complained of moderate pain and inability to sleep because of creeping sensation in lip and chin region, for which analgesic and mild sedative injections were given. In spite of that, the patient could not have sound sleep and complained of continued creeping sensation. Later patient was shifted to minor surgical theater and the close examination of the wound revealed black tipped white larvae moving in the wound. When the sutures were removed for complete exploration of the wound, it was found that the laceration was deep and communicating with labial vestibule (Figure 1).



Figure1: Large communicating wound of the lower lip

Few of the maggots were removed using non-toothed Addison's tissue forceps during which it was observed that, when the tissue was being retracted the maggots were moving deeper into the tunnels of tissue created by them by feeding upon it (Figure 2).



Figure2: Larvae being removed.

Both intra and extra oral wounds were thoroughly irrigated followed by application of turpentine oil for 10 minutes. This was used to asphyxiate the maggots and force them to come superficially so that they can be removed. The procedure was repeated several times until no more maggots were found. A total of about 200 maggots were removed (Figure 3). The wound was thoroughly irrigated and temporary dressing was placed.



Figure3: Group of larvae

Under general anesthesia the wound debridement was done by removing loose friable tissue fragments and copious irrigation. Surgical open reduction and fixation of the fracture was done using mini plates. Then wound was closed in layers. Post operative wound healing was uneventful. The patient was recalled for follow up check ups.

Few of the larvae were preserved in formalin and subjected to entomological examination. These were identified as larvae of house fly, Musca Domesticus of Order Diptera (Figure 4).



Figure4: Stereomicroscopic photograph of larva (magnification 10x, 30x & 30x respectively).

# Discussion

The risk factors for the development of myiasis are suppurative lesions, open wounds, scabs, traumatic wounds, ulcers contaminated with discharges and blood remnants. When these conditions are super-added with debilitation, mental or physical disability and poverty, the chances of myiasis increase.<sup>8</sup>

Review of the available literature on myiasis of oral and perioral region shows that infestation by multiple larvae is common.<sup>4,8</sup> Males are affected more, probably because they tend to spend more time outdoor and tend to neglect their hygiene.<sup>4</sup>

The patient in the present case was of low socioeconomic status having poor living conditions. She was aged and physically dependent for her routine activities especially after trauma. Unhygienic and insufficient initial wound debridement and dressing might have attracted flies. Since house flies are common in Indian houses with inadequate sanitation, chances of primary wound myiasis are more.

The life cycle of a fly in larval stage (6-8 days) requires an intermediate host for mechanical support and suitable substrate to feed on. The larvae have different features which facilitate their anchorage on to the tissue and for burrowing action.<sup>14</sup>

The traditional and classical treatment of myiasis is surgical debridement under local anesthesia followed by mechanical removal of maggots.<sup>5,11,17</sup> When there are multiple larvae, local application of various agents like turpentine oil,5,18 ethyl chloride, ether,<sup>12</sup> mercuric chloride, creosote, iodoform, chloroform,8 clove oil, calomel, phenol mixture,<sup>11</sup> gencian violet,<sup>13</sup> alcoholic solution in association with tobacco, camphor, sodium hypochlorite<sup>17</sup> is advocated. These agents are supposed to asphyxiate the aerobic larvae and force them to a more superficial position making manual removal easier with less damage to tissues and larvae as well.<sup>4,12</sup> Care should be taken not to rupture the maggots as it might cause allergic or foreign body reaction and secondary infection.<sup>8,12</sup> Systemic ivermectin has been used with favorable results in some cases.<sup>11,14,17</sup>

In the present case, symphysis fracture reduction was done after confirming complete

removal of larvae and adequate debridement of tissues.

Maggots separate the necrotic tissue from the living tissue, making surgical debridement of the wound easier. The proposed mechanisms of maggotinduced wound healing included: i) continuous flushing or irrigation of the wound by copious exudates formed by the host in response to the maggots; ii) killing, ingestion, and digestion of bacteria by the maggots; iii) secretion of allantoin (component of fetal allantoic fluid); iv) the rapid formation of granulation tissue stimulated by the continuous larval movement in the wound; v) liquefaction of necrotic tissue by the maggots and vi) maggot extracts stimulated significant increase in total human fibroblasts.<sup>2</sup>

It is hoped that this case report will be useful in the evaluation and treatment of patients with myiasis. Histories and physical examinations must be always comprehensive. The condition of the patient's hygiene and clothing must be noted. Wounds should be thoroughly cleansed and tetanus immunoprophylaxis should be updated as necessary. Follow-up within a week should be a standard practice and antibiotics need to be prescribed to prevent bacterial infection.

### Conclusion

Condition like myiasis of orofacial region can be prevented by educating the susceptible group about personal hygiene, primary care of any wound, control of fly population and maintenance of sanitation of the surroundings. Special care should be taken for dependent patients. Dental surgeon should be aware of such a condition and its management.

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