



## A rare case of Tracheostomal Myiasis- A Case Report and Review of Literature

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**Received:** April 05, 2020

**Published:** May 30, 2020

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### Abstract

Myiasis is the infestation of larvae of flies of the order Diptera, in humans. The larvae can infect various parts of the human body including, skin, necrotic tissues, and natural cavities of living persons. Myiasis in the tracheostomy stoma is very rare. We present one such case of myiasis in the tracheostoma in a 42-year-old male patient who is a known case of retroviral disease and pseudobulbar palsy.

**Keywords:** Myiasis; Tracheostomy Stoma

### Introduction

The term myiasis is derived from the Greek word "muia" which means fly. Hindu mythology describes myiasis as "God's punishment for sinners" [1,2].

Myiasis is the infestation of larvae of flies of the order Diptera in humans. The larvae can infect skin, necrotic tissues, and natural cavities of living persons.

Myiasis can be primary if it infects intact skin, or secondary if it infects a previous injury site. Myiasis may be classified depending on the relationship with the host, as obligatory- which requires a live host for parasite survival, facultative-developing in live or dead organic matter; or accidental where they develop accidentally in an inappropriate host [3].

Myiasis is rare in the western countries. It is commonly seen in hot and humid climates in tropical and subtropical regions, such as underdeveloped areas of the Indian subcontinent, Africa, and Southeast Asia, which provide favorable breeding grounds for flies [4,5].

Myiasis can infest various parts of the human body. But Myiasis in the tracheal stoma is very rare and not many cases have been reported in the English literature. Here we report a case of Myiasis in the tracheostoma seen in a patient with retroviral disease and pseudobulbar palsy.

### Case Report

A 42 year old male patient, a known case of Retroviral disease on medication, presented with complaints of fever, redness and maggots at the tracheostoma site since 1 week. He had history of

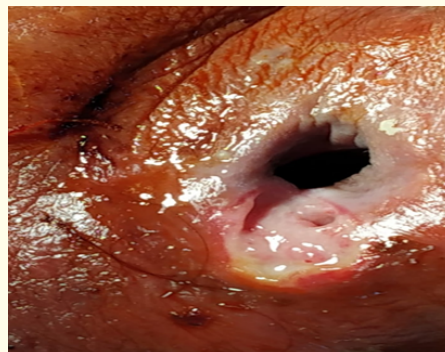
Multi Drug Resistant Tubercular Meningitis and Pseudo bulbar palsy with right sided hemiparesis and left sided hemiplegia, following which he was tracheostomised and was on PEG feeds. He was getting rehabilitative care at a local hospital in his village, where there was poor hygienic environment. Tracheostomy tube had not been changed since more than 2 years and did not receive regular tracheostomy tube and stoma care.

On examination, he was conscious and was obeying commands. He was tachypneic, tachycardiac and hypotensive, maintaining 95% oxygen saturation on room air. He was on size 7 cuffed tracheostomy tube with foul smelling discharge from the wound. There was diffuse tender swelling around the stoma, with features of cellulitis, which was more on the left side. When the flange of the tracheostomy tube was lifted, multiple live maggots were seen in the stoma (Figure 1 and 2). As he was in septic shock, he was shifted to an isolation room in the ICU. He was resuscitated with IV fluids, vasopressors and IV antibiotics after taking culture from the tracheostomy wound and tracheal secretion. CT of the neck and thorax revealed soft tissue swelling and subcutaneous edema with few air pockets surrounding tracheostomy site in a subcutaneous plane with no extension into the thorax (Figure 3).

After he was stabilized, visible live maggots were removed. Gauze soaked in turpentine oil (few drops only) was carefully placed around the stoma for few minutes. Turpentine oil has to be used cautiously to prevent chemical pneumonitis. After removing the gauze, few more live maggots were seen crawling out, which were removed. Wound was then cleaned and dressing was done. This was done twice daily for 3 days and then he was taken under General anaesthesia for exploration of the wound and tracheostomy tube change. Necrotic tissue and few more live maggots were



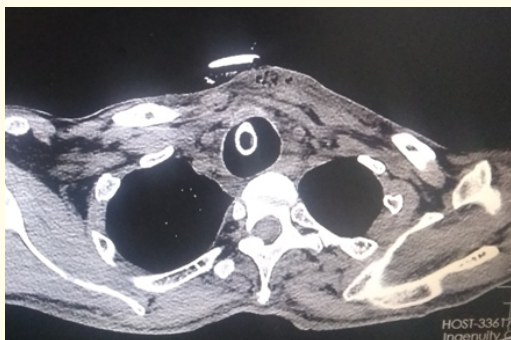
**Figure 1:** Cellulitis around the tracheostomy stoma.



**Figure 5:** Necrosis around the stoma.



**Figure 2:** Maggots which were removed.



**Figure 3:** CT scan of Neck and Thorax showing soft tissue swelling and subcutaneous edema with few air pockets.



**Figure 4:** Live Maggot being removed.

removed (Figure 4 and 5). A deep pocket under the skin was seen around the stoma on the left side, which was thoroughly cleaned. Tracheostomy tube was then changed with utmost care, avoiding entry of the maggots into the airway. In total, about 30 live maggots were removed.

Gene Xpert from the tracheal aspirate was negative for *Mycobacterium tuberculosis*. Deep tracheal aspirate culture sensitivity grew *E. coli*, *Stenotrophomonas maltophilia* and *Moraganelia morganii*. IV antibiotics were advised accordingly.

With regular dressing of the tracheostomy stoma, the wound healed well in 2 weeks (Figure 6) and he was off vasopressor support. Flexible nasopharyngolaryngeal examination was done before discharge. He had pooling of saliva in bilateral pyriform sinus, vocal cords were mobile with mild phonatory gap and he was aspirating. So, he was advised to continue PEG feeds and rehabilitative care.



**Figure 6:** Healthy wound.

Patient’s attenders were counseled and taught regarding regular tracheostomy wound care.

**Discussion**

Myiasis was defined by Zumpt in 1965, as the infestation of live human and vertebrate animals with dipterous larvae, which at least for certain period feeds on the host’s dead or living tissue, liquid body substances, or ingested food [6].

Dipterous larvae can be classified based on the tropism of the tissue as [1]:

1. Cutaneous Myiasis- invading dermo-epidermal layers of the host
2. Myiasis of natural orifices- nose, ear, oral, pharyngeal myiasis
3. Myiasis with inner migration- larvae migrate inside the body before emerging at skin level.

Tracheostomy stomal Myiasis is rare and very few have been reported in English literature (Table 1).

Predisposing factors for the development of myiasis are low socioeconomic status, unhealthy environments, exposed wound with fowl smelling discharge which attracts flies, advanced age, alcoholism, neurologic diseases, vegetative state of the patient, immunocompromised individuals, psychiatric illness and lack of personal hygiene [3,7].

Chigusa, *et al.* stated that patients with psychiatric disorders, elderly and debilitated persons, should be protected from flies, because of their autism and/or decreased sensitivity, which may make it easy for flies to deposit eggs or larvae on the patient’s body surface or orifices [8].

Author and country	Patient Age/ Sex	Associated conditions	Fly species	Year of publication
Josephson RL, <i>et al.</i> [9] Canada	85/F	Comatose state	Unidentified	1993
Franza R, <i>et al.</i> [1] Italy	57/M	Persistent vegetative state	<i>Lucilea caesar</i>	2006
Batista-da-Silva JA, <i>et al.</i> [7] Brazil	49/M	Carcinoma of neck	<i>Cochliomyia hominivorax</i>	2011
Prasanna Kumar S, <i>et al.</i> [10] India	78/M	Head injury following Road traffic accident	<i>Chrysomya bezziana</i>	2011
Bleijter J, <i>et al.</i> [11] Argentina	8/M	Cerebral palsy	Unidentified	2012
Shakeel M, <i>et al.</i> [12] India	52/M	Carcinoma Larynx	<i>Musca domestica</i>	2013
Hemant V, <i>et al.</i> [13] India	73/Not available	Carcinoma supraglottis and Diabetes	<i>Chrysomya bezziana</i>	2013
Kaya KH, <i>et al.</i> [14] Turkey	86/F	Tetraplegia	<i>Lucilea caesar</i>	2014
Rajarshi S, <i>et al.</i> [15] India	62/M	Carcinoma supraglottis	Unidentified	2015
Manickam A, <i>et al.</i> [16] India	57/M	Carcinoma glottis	<i>Chrysomya bezziana</i>	2015
Virgilio E, <i>et al.</i> [17] Peru	67/M	Oesophageal carcinoma	<i>Cochliomyia hominivorax</i>	2016
Sharma R, <i>et al.</i> [18] India	2/M	Subglottic stenosis	Unidentified	2017
Sumana CV, <i>et al.</i> India	42/M	Retroviral disease, pseudobulbar palsy	Unidentified	This study

**Table 1:** Review of literature of myiasis in tracheostomy stoma.

Our patient was immunocompromised, living in unhygienic environment, paralyzed and his tracheostomy tube was not changed for a long time, which might have predisposed to develop Myiasis.

Clinical features of myiasis are visible larvae in the wound, and secondary infection. Sometimes lesions enlarge due to destruction of tissues causing necrosis.

Treatment involves mechanical removal of all the larvae. Topical application like turpentine oil, ether, chloroform which is used commonly in other sites, should be used with caution at the tracheostomy stoma. These should not be used directly on the wound and minimal quantity soaked in gauze should be applied for few minutes, to prevent tracheal mucosal irritation and chemical pneumonitis. This suffocates the larvae which makes them migrate out of the wound to the surface, which can then be removed. It is important to avoid direct projection of light at the site of infestation to prevent migration of maggots into the trachea, as the larvae tries to move away from light [9,10,19].

Thorough and regular cleaning of the wound is necessary. Sometimes, debridement and surgical exploration under general anaesthesia may be needed to remove necrotic tissue and deep seated larva. Single oral dose of Ivermectin (0.2 mg/kg), which is an antiparasitic drug has also been used as treatment for this kind of myiasis. Ivermectin has a broad antiparasitic spectrum that causes immobilization of parasites by inducing tonic paralysis of the parasite’s muscles, mainly at the pharyngeal level, resulting in the death of the parasites by suffocation and starvation [17]. In our case, wound healed well even without the use of Ivermectin, as seen in other studies [1,10,11,15,18].

Systemic broad spectrum antibiotics are needed to prevent secondary infections. Underlying predisposing factors like nutrition and anaemia also needs to be addressed [7,12].

Preventive measures should be taken like maintaining good personal hygiene, preventing flies from entering houses and hospitals, daily dressing of tracheostomy stoma, regular suctioning of trache-

al secretions, covering the tube by a fine wet gauze. Tracheostomy tube should be changed regularly.

### Conclusion

Myiasis of tracheostomy stoma is very rare. Though not a lethal disorder, knowledge of this disease is necessary to prevent, diagnose and treat the condition. It can be fatal if it occurs near great vessels and vital organs. Management of myiasis needs precaution while removing maggots to prevent aspiration and cautious use of chemicals avoiding chemical pneumonitis.

Otorhinolaryngologists should be aware of this disease, especially in the western countries where the incidence is very rare. It is important to educate the patient and relatives about the proper care of the tracheostomy tube and stoma and the need for regular follow up.

### Conflict of Interest

None.

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