



# Tracheostomal myiasis in a female patient

## *Bir kadın hastada trakeostomal miyaz*

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Myiasis is defined as the infestation of humans and/or animals with dipterous larvae. While the incidence of myiasis increases in tropical and subtropical areas, it is still a common disease worldwide. Appropriate hygienic and health care conditions are essential for preventing the disease. Myiasis may cause severe morbidity or mortality if not treated properly. Myiasis of the tracheostomy wound is an extremely rare condition. In this article, we report an 86-year-old tetraplegic female patient with tracheostomal myiasis.

**Keywords:** Myiasis; tracheostomy; wound.

Miyaz, çiftkanatlı larvaların insan veya hayvanları infeste etmesi olarak tanımlanır. Miyaz insidansı tropikal ve subtropikal bölgelerde artsa da hastalık tüm dünyada yaygındır. Hastalığın önlenmesinde uygun hijyen ve sağlık bakım koşulları büyük önem taşır. Miyaz uygun şekilde tedavi edilmezse ciddi morbidite veya mortaliteye neden olabilir. Trakeostomi yarası miyazı oldukça nadir görülen bir durumdur. Bu yazıda trakeostomal miyazlı 86 yaşında tetraplejik bir kadın hasta sunuldu.

**Anahtar sözcükler:** Miyaz; trakeostomi; yara.

Myiasis is the infestation of tissues with fly larvae. The term Myiasis was derived from Greek words -myia (fly) - and -iasis (disease).<sup>[1]</sup> In Hindu mythology it is regarded as “God’s punishment for sinners”. The term was first used by the Rev F. W. Hope in 1840.<sup>[2]</sup>

According to larvae feeding mode, myiasis can be divided in an obligative or facultative form. In the obligative form, host living tissue is necessary for larval growth. In the facultative form, larvae may feed on host corpse, necrotic tissue or faeces. They can also live without using host production.<sup>[2]</sup>

According clinical presentation, myiasis can be divided into four:

a) *Furunculoid*: pruritis, pain, fever and secondary infection accompanying a nodule that contains only one larva.

b) *Subcutaneous infestation with tunnel formation*: widespread painful and pruritic tunnels that can mimic cutaneous larva migrans.

c) *Subcutaneous infestation with migratory swelling*: resembles both furunculoid type and subcutaneous infestation with tunnel formation. Tunnels end with furunculoid nodules and larvae move up to the surface to take oxygen.

d) *Wound myiasis*: wound contains apparent larvae. Owing to tissue destruction and necrosis, the wound can be infected with bacteria secondarily.<sup>[3]</sup>

Tracheostomal myiasis is a kind of wound myiasis and rarely reported in the literature. We present a female patient who came to our clinic with tracheostomal myiasis.

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## CASE REPORT

An 86-year-old female patient was referred to our hospital emergency department with consciousness disturbance and a history of maggots appearing in the tracheostomal wound for two-days. She had a history of ischemic cerebrovascular disease and tetraplegia. Additionally, she had hypertension and diabetes mellitus type 2. She used Glifor® (1000 mg/day) for diabetes mellitus and Purinol® (20 mg/day) for urinary tract infection but she had not used any medication for hypertension for two years. She was immobile, debilitated and bedridden for five years. She had bad hygienic condition with poor personal care. After she was treated in the intensive care unit for two months, five years ago, a tracheostomy and gastrostomy were performed. Her tracheostomy canula was changed only two times in the past five years. On physical examination maggots were seen around the tracheostomy canula (Figure 1). Thirty live larvae were carefully removed from the tracheostomy wound. Larvae were 9-12 mm long and 2-3 mm wide (Figure 2).

The peritracheostomal area inflamed and had a bad odor. A flexible bronchoscopy was performed in order to rule out the presence of larvae in the lower respiratory tract, and no larvae or debris were found. A new tracheostomy canula was placed. The cuff of the canula was inflated and the wound was cleaned with povidone iodine and 70% ethanol. The patient was referred to the infection department of our hospital and no additional therapy was offered. She was discharged and called for daily examination and wound cleaning for one week. The wound completely recovered after seven days follow-up.

The living maggots were sent to our hospital microbiology department for identification, where they were defined as *Lucilia Caesar* maggots in the third stage.

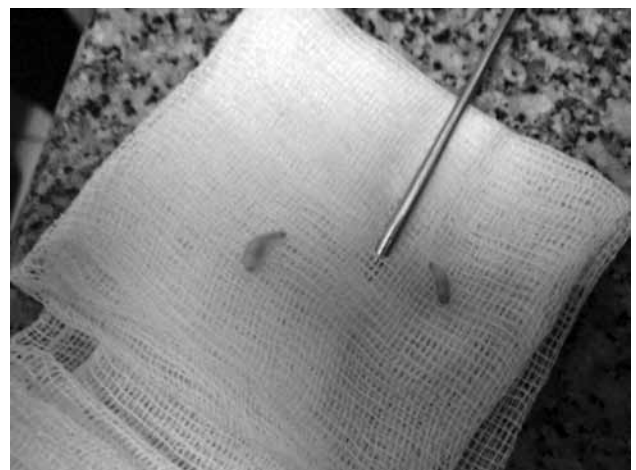


**Figure 1.** Maggots around the tracheostomy cannula.

## DISCUSSION

Several studies have previously reported tracheostomal,<sup>[4]</sup> ear,<sup>[5]</sup> nose and sinus,<sup>[6]</sup> malignant wounds of head and neck,<sup>[7]</sup> oral cavity and lymph node myiasis.<sup>[4]</sup> According to the English-language literature consulted, tracheostomal myiasis is a very rare condition.<sup>[2,3,8,9]</sup> To our knowledge, there were only five cases reported previously in the literature. Of these, one subject was in a vegetative state,<sup>[8]</sup> one pediatric subject had cerebral palsy,<sup>[3]</sup> one had previous head trauma<sup>[2]</sup> and one each had hypopharyngeal carcinoma<sup>[9]</sup> and laryngeal carcinoma<sup>[9]</sup> respectively. *Lucilia Caesar*<sup>[8]</sup> and *Chrysomya bezziana*<sup>[2,9]</sup> larvae were identified in four subjects while the species of maggot was undetected in one.<sup>[3]</sup>

*Chrysomya hominivorax*, *Chrysomya bezziana*, *Lucilia sericata* and *Musca Domestica* are the most common causes of wound myiasis.<sup>[3]</sup> Myiasis is rare in developed countries<sup>[4]</sup> and mostly seen in tropical and subtropical areas.<sup>[7]</sup> The most infested site of the body is skin but larvae may infest any site of the body. *Lucilia Caesar*, a member of the Calliphoridae family is the most frequently isolated agent in developed countries. It is described as a facultative and medium sized (8-12 mm) parasite. Cadavers and wounds are convenient places for adult females to leave their eggs and the primary larvae are hatched in those necrotic tissues. They feed on corpses and necrotic materials with their proteolytic enzymes' and double mandibular hooks'. As in our case, third stage larvae continued to grow in this necrotic tissue and cause bad odor. The mature larvae have a whitish color and cylindrical body but are legless. After a pupal stage, an adult fly begins its active life. Larvae life cycle takes approximately 3 to 10 days according to nutrition facilities. The specie of the parasite can be



**Figure 2.** Removed live larvae.

identified according the posterior part of its body. The two external apertures of the respiratory tract located in the posterior part of larvae and termed stigma are used for identification of the subspecies of the maggot.<sup>[8]</sup>

Risk factors for myiasis include low socioeconomic status,<sup>[2]</sup> advanced age, mental problems, poor hygienic conditions, bad housing conditions,<sup>[7]</sup> untreated traumatic wounds which can cause tissue necrosis,<sup>[1]</sup> diabetes mellitus and vascular disorders.<sup>[4]</sup> Due to altered consciousness or local hypoesthesia, it is difficult for patients to realize the infestation.<sup>[4]</sup> Living in rural areas<sup>[8]</sup> and interacting with domestic or peridomestic animals<sup>[2]</sup> are other risk factors. Undressed wounds, neglected patients and nursing carelessness can cause nosocomial infestations especially in the summer season.<sup>[4]</sup>

The morbidity of myiasis is related to its localization in the body and inflammation rate. Eye, ear, nasal or otic myiasis can cause death if the skull base and central nervous system are infested.<sup>[5]</sup> In nasal myiasis, cranial involvement is a potential complication and in such patients the fatality rate is approximately 8%. Pneumocephalus is also an expected complication of nasal myiasis.<sup>[6]</sup> Periorbital cellulitis and blindness are the major complications of the ophthalmomyiasis.<sup>[3]</sup> Wound myiasis can be locally aggressive and mostly results in secondary bacterial infection. Due to the maggots' invasion, inflammation and edema, patients complain of severe pain. If sensory nerves are involved, pain is reduced.<sup>[9]</sup> When cleaning out maggots, the physician has to be aware of potential complications related to larval removal. If major vessels like the jugular vein and carotid artery are penetrated with larvae, abundant bleeding can occur. Thrombosis and maggot embolization of major vessels are other potentially lethal vascular complications.<sup>[2]</sup>

In tracheostomal myiasis, because of the risk of lower airway obstruction and aspiration pneumonia, migration of maggots to the tracheobronchial tree should be prevented during treatment.<sup>[8]</sup> Regular tracheostomal dressing and good hygienic conditions are crucial for preventing tracheostomal myiasis. Preventing risk factors like malnutrition and anemia and ironing clothes and treating infected animals are also important for prevention of the disease.<sup>[3,9]</sup>

There are no standard treatment guidelines for myiasis. Treatment includes larval removal, antisepsis, regular dressing and general care interventions.<sup>[7]</sup> Antibiotics and larval removal are effective for treating

secondary infection. On suspicion of hidden maggots, ether, chloroform, turpentine oil or vaseline solution dressings can be used. Antiparasitic drugs like ivermectin and doramectin should be used for furunculoid, migratory or invasive myiasis which is not curable with other treatment methods.<sup>[2,3]</sup>

### Conclusion

Poor sanitation is the most important risk factor for human myiasis. Field control of flies is the most important measure for preventing infestation. Regular wound dressing and good hygiene are crucial for treatment. Head and neck region myiasis can cause potentially lethal complications if not treated properly.

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