International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Tracheostomy Infestation by Sarcophaga Species in a Laryngeal Carcinoma Patient: A Case Report

Dr. Rollin Palermo Tabuena[1], Dr. Ma. Daisy Pedroso Tabuena[2], Dr. D'wanie Conlu[3]

[1,2,3]Physician, Internal Medicine, Iloilo Mission Hospital

ABSTRACT

BACKGROUND. Myiasis is a parasitic infestation of humans caused by dipteran flies' larvae, which feed on the host's tissue. It affects various body parts, including the skin, eyes, ears, nose, mouth, and gastrointestinal tract. Cutaneous myiasis is the most common clinical form, while wound myiasis is the main manifestation. Myiasis can be caused by various fly families, including blowflies, flesh flies, and botflies, with different types depending on the site and infestation type.

A rare occurrence rarely reported in medical literature, Sarcophaga species infestation within a tracheostomy tube in a patient with laryngeal carcinoma, is presented in this case. Given that the airway is protected and has built-in barriers against external contamination, the presence of flesh flies (Sarcophaga spp.) at a tracheostomy site is extremely uncommon. By showing how weakened respiratory structures, along with particular environmental and patient factors, may make people more susceptible to this uncommon parasitic complication, this report adds to our understanding of the condition. Recognizing such atypical infestations is crucial for clinicians in early diagnosis, prevention, and effective management of similar cases.

CASE PRESENTATION. The study details a rare instance of Sarcophaga species myiasis in a tracheostomy tube in a patient who had laryngeal carcinoma after radiation therapy. The 71-year-old farmer patient first complained of pruritus, localized warmth, and tightness in his neck. Prior tracheostomy excision and cobalt therapy were part of his medical history.

After being treated for pneumonia, the patient experienced severe bleeding at the tracheostomy site, which led to additional testing. Many larvae were seen emerging from necrotic tissues during clinical examination, which raised the possibility of myiasis. Sarcophaga spp., a rare discovery in respiratory structures, were confirmed to be present by species identification.

More than 100 larvae were removed during the emergency surgical procedure, which also involved replacing the compromised tracheostomy tube and cutting and draining necrotic areas. Following surgery, there were no more bleeding or reinfestation episodes, and the patient showed signs of stable recovery.

CONCLUSION. The parasitic infestation known as myiasis, which is brought on by dipteran fly larvae, is usually linked to exposed wounds and weakened tissue. Flesh flies, or Sarcophaga species, are drawn to recently opened, exudative wounds, which makes them more likely to infest susceptible people. Although myiasis commonly occurs in cutaneous wounds, ocular, and nasopharyngeal sites, it is extremely uncommon to occur in tracheostomy incisions, especially in tropical areas like the Philippines. The need

for increased clinical awareness of this uncommon complication is highlighted by this case, which shows an unusual manifestation of Sarcophaga species myiasis within a tracheostomy tube of a patient who had laryngeal carcinoma following radiation therapy.

Prioritizing preventive measures, such as thorough wound hygiene, efficient fly control techniques, and ongoing post-operative monitoring, is necessary due to the grave consequences of tracheostomy-associated myiasis. Parasitic infestations are more likely to occur in patients recuperating from head and neck surgery, especially those who have had extended wound exposure. Patient outcomes can be improved and morbidity can be considerably decreased by teaching family members and caregivers about wound surveillance, early detection, and prompt intervention. To reduce the chance of infestation, preventive measures like appropriate wound dressing, environmental sanitation, and fly management must be strengthened.

In order to develop more focused preventive measures, more research is necessary to identify the endemic distribution of rare myiasis-causing species and to characterize them. Clinicians can establish more efficient management procedures by identifying particular environmental factors and patient vulnerabilities that contribute to atypical myiasis cases. The knowledge gathered from this report adds to the body of knowledge on tracheostomy-associated myiasis and is a useful guide for early detection and treatment of similar cases.

Keywords: Myiasis, tracheostomy, laryngeal carcinoma, sarcophaga spp., peritreme, case report

INTRODUCTION

Since the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) appeared in China in late 2019, the Coronavirus disease (COVID-19) epidemic has rapidly escalated into a pandemic, which was formally proclaimed by the World Health Organization (WHO) on March 11, 2020. Public health systems throughout the world were unprepared to deal with the spread of SARS-CoV-2, necessitating an urgent need for hospitals to enhance their capacity to handle the enormous influx of dangerously ill COVID-19 patients and avoid a public disaster. Myiasis is a disorder in which fly larvae infest the live organism. It is more common in tropical climates but could happen across the world. It is most commonly encountered in newborns or adults in poor health who are unable to defend themselves by driving flies away or cleansing infected wounds. Myiasis is most commonly seen in anatomic cavities, orifices, and necrotic tissue locations, however, some fly species (such as Chrysomya bezziana, Cochliomyia hominivorax, Cordylobia anthropophaga, Dermatobia hominis, and Sarcophaga spp.) can infiltrate healthy skin as well. Previous research has revealed that parasitic infections account for 0.6-0.7% of intrahospital infections globally, with specific incidence and prevalence varying by geographic area (about 1% in Western Europe).[3]

Myiasis is a well-known parasitic infestation brought on by dipteran fly larvae, but there are very few documented cases of it occurring in tracheostomy sites. An unusual instance of Sarcophaga species infestation in a tracheostomy tube in a patient with post-radiotherapy laryngeal carcinoma—an anatomical site that is rarely impacted by myiasis—is reported in this report. The role of Sarcophaga species. is especially notable because the airway is protected and the barriers usually keep outside contaminants out. Myiasis can be obligatory (requiring a live host for parasite survival), facultative (developing in live or dead organic materials), or accidental, depending on the degree of parasitism (developing accidentally in an inappropriate host). Myiasis may also be distinguished based on the host's anatomical participation,

such as 1) Cutaneous involving the skin near a wound or beneath the skin (creeping); 2) "Wound" myiasis; and 3) bodily orifices such as urogenital[2]

This case emphasizes the significance of increased vigilance in post-operative wound care, environmental sanitation, and early detection of atypical parasitic infections, given the uncommon presentation and clinical difficulties associated with tracheostomy-associated myiasis. This report adds to the body of medical knowledge by describing this uncommon occurrence and highlighting the importance of quick action, species identification, and specialized management techniques in these situations. Clinicians can help prevent similar infestations in high-risk individuals by having a thorough understanding of the environmental, patient-specific, and procedural risk factors involved.

CASE REPORT

A case of a 71-year-old male farmer who complained of neck tightness. He was diagnosed with laryngeal carcinoma 2 years prior. Since then, he has undergone excision of the tumor with tracheostomy creation and 3 sessions of cobalt therapy. He was lost to follow-up thereafter but his immediate caretakers claimed that there was religious daily wound care of his tracheostomy. The patient's daily activities included visiting their rice fields and tending to their varied farm animals.

However, 5 days before admission, he noted intermittent neck tightness or fullness starting from the tracheostomy site and extending to the posterior neck of varying severity which would resolve spontaneously. After 3 days, he complained of occasional itchiness with accompanying warmth coming from within the anterior neck and alongside his tracheostomy site causing paroxysms of dry cough. There were no discharges nor foul-smelling odor from the wound area. The patient was afebrile and not dyspneic. Symptoms persisted, and thus the patient was admitted.

On physical examination, he was ambulatory and not in cardiopulmonary distress. There was no swelling, erythema, or tenderness on and around the tracheostomy site. However, there were also necrotic areas seen. Occasional crackles were heard on lung auscultation. The rest of the findings were unremarkable. Complete blood count and chest radiograph were normal.

He was initially treated for pneumonia in an immunocompromised host with a fungal infection. Sputum studies showed Citrobacter sp. isolate and positive for KOH. Based on drug sensitivity tests, a combination of 1 gram of Meropenem every 8 hours IV for 14 days; Amikacin 500 mg IV for seven days was given including empiric therapy of Anidulafungin and Fluconazole 150 mg once a day for 14 days (oral). Due to their significant smoking history, he was also considered to have a chronic obstructive pulmonary disease with chronic bronchitis and emphysema.

On the 4th hospital day, there were occasional bleeding episodes from the tracheostomy site. Tranexamic acid was given as needed to control the bleeding plus the application of pressure packing of the wound. The patient was referred to a general surgeon for a change of tracheostomy tube.

By the 5th hospital day, the bleeding became profuse. On examination, numerous maggots were seen crawling their way out of the necrotic areas surrounding the tracheostomy. Extraction of individual larvae resulted in more bleeding. A referral to an ENT surgeon was made.

The patient underwent immediate surgery. Approximately more than 100 larvae were removed with incision and drainage of necrotic tissues. A new tracheostomy tube was replaced. The larvae were preserved in formalin. The specimens were sent for histopathologic study and proper species identification. There were no further episodes of bleeding post-operatively and the patient's complaint of neck tightness and other symptoms were resolved.

Based on the gross morphology, the maggots belonged to the Sarcophagus spp. or flesh flies.

DISCUSSION

EPIDEMIOLOGY

In English literature, only 3 previous cases were reported involving myiasis on tracheostomy sites. It is considered rare because most cases of such infestation are seen on nasal, auricular, oral, or urogenital areas. Cases of myiasis on malignant wounds from malignancies of the head and neck are also few in the literature.[5]

***Sarcophaga spp.* maggots from tracheostomy site**

Myiasis is a parasitic infestation that typically affects natural body cavities and exposed wounds. It is brought on by dipteran fly larvae. Although myiasis is common in tropical and subtropical areas, there are very few documented cases of it occurring at tracheostomy sites in the literature. It is a rare disorder that is more prevalent in tropical and subtropical regions. Despite being uncommon in the Western world, it is on the rise in non-endemic countries because of increased worldwide travel. It is the fourth most prevalent travel-related skin illness, accounting for between 7.3% and 11% of cases. Myiasis is common in the tropics which includes the Philippines. This case study highlights the importance of Sarcophaga species infestation in clinical practice by presenting an unusual instance of the infestation within a tracheostomy tube.

TRACHEOSTOMY-ASSOCIATED MYIASIS AND CASE SIGNIFICANCE

Myiasis is an ectoparasitic infection induced by the larvae or maggots of true flies. Human myiasis is caused by Calliphoridae, Sarcophagidae, Oestridae, Muscidae, and Hypodermatidae parasites. Because of the climatic potential, the virus is significantly more widespread in tropical and subtropical locations across the world. The flies are usually found in cities, where sanitation, insufficient rubbish disposal, and animal husbandry allow the larvae to flourish.[15] Myiasis is spread by gravid female flies drawn to the scents of diseased wounds, decomposing organic materials, excrement, urine, and human food. It is divided into two categories: main and secondary myiasis. The nasal, auricular, oral, and urogenital areas are affected by the majority of myiasis cases that have been documented. However, infestation in this anatomical location is uncommon because tracheostomy sites are normally protected. In this instance, a rare occurrence that demands clinical attention is highlighted by the presence of Sarcophaga species in a patient who had laryngeal carcinoma following radiation treatment. The discovery of larvae in advanced

instar stages indicates extended exposure, highlighting the necessity of increased wound monitoring in patients who are at risk.

In the island of Panay, Chrysomya spp. is the main causative agent. It belongs to the screwworm flies and mostly as obligate parasites feeding on wounds and decaying flesh. The females are oviparous. The larvae have prominent rings of spines around the body giving them the name screwworm because they resemble the threads of a screw. The spines are large compared with those of non-screwworm blowflies, the longest averaging 130 m, and they help maintain the larva's position in the wound. On the posterior face of the terminal segment, the posterior spiracles (breathing openings) have a darkly pigmented, incomplete peritreme–-a rounded plate that surrounds the spiracles in some insects, enclosing three straight, slightly oval-shaped slits, which point toward the break in the peritreme.

However, in this case, the entomologist described the maggots as about 13 mm to 14 mm in length with a tapered anterior end, rounded body and a blunt posterior end. Examination of the posterior spiracles showed them to be in a depressed groove on the posterior end of the maggot. The spiracular shape is relatively round with incompletely surrounded by sclerotinized peritreme-–a dark-brown biological pigment formed by an enzyme-catalyzed tanning of protein. The specimen also exhibits an indistinct tracheal opening in the spiracle. The spiracular openings are straight slits while the body is covered with spines that are distributed in distinct bands around the body of the maggot. The larvae were in the 3rd to 4th instar stage and were identified as those of Sarcophaga spp.

Sarcophaga spp. 3rd to 4th instar maggots

The maggots were about 13mm to 14mm in length with a tapered anterior end, rounded body and a blunt posterior end.

In this case report cavitary myiasis corresponds because the infestation happens in natural body cavities. The infestation usually receives the name of the anatomic region affected. Internal organs affected by dipteran larvae are also included in this group. This case report is a **Tracheostomy myiasis** which is not common, with few cases. This type is characterized by crawling maggots seen between the tube and the skin. Special precautions should be taken to avoid removing the inner tube, since larvae can fall into the trachea and cause pneumonia. Persistent vegetative state, inadequate cleanliness surrounding the tube, rural environment, and odor of slightly infected tracheostomy are variables that might predispose patients to this kind of myiasis.[6] Out of the reported cases, none of them are similar to this case and its locality—the Iloilo, Philippines.

Dipterous larvae infection is widespread in people with poor health in tropical and subtropical climates. Poor hygiene, low socioeconomic level, exposure to preexisting lesions, immunodeficiency, and climatic circumstances are also risk factors. Older age and poor nutrition are other risk factors. This kind of myiasis is more likely to be caused by deliberation of blood or smells, sedation and mechanical breathing,

inadequate nursing care, summertime, and a variety of comorbidities that impair the vascular condition of immunocompromised individuals. Patients with draining, chronic wounds, and dressings contaminated with purulent, mucoid drainage, or bodily fluids are also at a higher risk.[3] And all of this was found in this case report.

This case is novel and unique in its presentation. The researchers surveyed the literature and what was reported of Myiasis of a Tracheostomy Tube were the following: Myiasis of Peristomal Sinuses Around Tracheostomy Wound,[8] motor neuron disease with bulbar and bilateral vocal cord palsy,[7] peristomal sinuses around tracheostomy wound,[8] and tracheostomy wound.[1]

LARVAL IDENTIFICATION AND PATHOPHYSIOLOGY

Dipterous larvae are classified into three types based on tissue tropism, such as):

cutaneous and subcutaneous myiasis: they invade the host's dermo-epidermal layers, as well as deeper tissues up to the natural cavities. They are caused by larvae that infest wounds, especially those that are draining, or sores;

natural cavity myiasis: includes rhinomyiasis, otomyiasis, oral, pharyngeal, and laryngeal myiasis; and **inner migration myiasis**: larvae travel inside the body before emerging at skin level. Despite malignant wounds are widely known to be a risk factor for wound myiasis, instances of malignant wound myiasis have only lately begun to be recorded. Infestation of parts of one's body by fly larvae, particularly in patients with end-stage cancer, may bring to mind the impending prostration and decomposition of the entire body and cause long-term psychological effects on patients' minds, compromising the patient's quality of life and treatment outcome.[4]

There are varied categories for myiasis. It may be classified according to their ovipositioning and larvipositioning habits.

Accidental myiasis. According to Francesconi and Lupi (2012), incidental myiasis or pseudomyiasis is an ecological categorization rather than an anatomical classification. This phrase refers to any condition in which a dipteran species is unable to completely grow while parasitizing a host. In humans, pseudomyiasis should be used in conjunction with another anatomical categorization, such as inadvertent intestinal myiasis. Some writers define pseudomyiasis to be the presence of any symptom induced by a non-parasitizing dipteran maggot, which causes some confusion. In intestinal myiasis, for example, symptoms are generated by the larvae passing through the gastrointestinal system, which causes inflammation in response to the physical presence of the parasite, resulting in symptoms. However, in migratory myiasis, the agent can grow in human skin even if it cannot complete its life cycle, and the symptoms are produced by the maggot's capacity to parasitize human skin. Migratory myiasis, in our opinion, should also be classified as pseudomyiasis because the larvae are unable to complete their life cycle. If eggs or larvae are deposited in or near living tissues/organs and larvae inevitably become parasitic, we call this Specific or Obligate myiasis. Screwworm flies (Callitroga sp, Chrysomyia sp.,), Bot flies (Gasterophilus sp), and Warble flies (Hypoderma sp) are the main culprits. **Semi-obligate myiasis** occurs when eggs and larvae are deposited in decaying organic matter and less frequently in diseased tissues and neglected wounds. The following species are identified with this type of myiasis: a. Flesh flies - Sarcophaga sp, b. Green Bottle Flies - Lucilia sp, c. Blue Bottle Flies - Calliphora sp, d. Black Bottle Flies - Phormia sp.[4]

The larvae that were recovered were determined to be Sarcophaga spp. based on physical characteristics like a tapered anterior end, rounded body, and spiracular openings in a depressed posterior groove.

Sarcophaga larvae differ from other myiasis-causing species in that they lack distinct tracheal openings, in contrast to screwworm flies (Chrysomya spp.), which have prominent spines. This uncommon discovery emphasizes the necessity of specific entomological knowledge in the diagnosis of myiasis.

RISK FACTORS AND PREVENTION

Poor hygiene, extended wound exposure, immunocompromised status, and insufficient post-operative care are risk factors for myiasis. Other risks for tracheostomy patients include exposure to unhygienic conditions, prolonged hospitalization, and ongoing wound drainage. The following should be the top priority for preventive measures:

- Wound hygiene: Proper dressing and routine cleaning
- Minimizing fly exposure in recovery environments through environmental sanitation
- Education for patients and caregivers: instruction on identifying early infestation symptoms

CONCLUSION

In tropical nations such as the Philippines, where exposure to the environment, socioeconomic hardships, and unequal access to medical care can increase vulnerability, tracheostomy-associated myiasis is still a very uncommon and underreported clinical entity. This instance emphasizes how crucial it is to identify unconventional infestation sites, like tracheostomy wounds, particularly in cancer patients who have weakened local immunity and extended wound exposure. A significant addition to the growing list of dipteran parasites linked to human myiasis is the verified existence of Sarcophaga species, which had not been previously documented in this anatomical setting. The infrequency of these presentations emphasizes the necessity of heightened clinical suspicion and interdisciplinary cooperation to facilitate precise diagnosis, prompt intervention, and species-specific identification—an aspect that is frequently disregarded because of the scarcity of entomological resources in many endemic environments.

With an emphasis on continuity of care through organized wound surveillance programs and caregiver education, preventive care must go beyond hospital discharge. Particularly in high-risk populations like the elderly, immunocompromised individuals, or patients with chronic open wounds, at-home wound inspection during the first week after discharge can be crucial in spotting early indications of infestation. Regular cleanliness and appropriate dressing of wounds are essential, but they should be emphasized in a framework that empowers caregivers and is sensitive to cultural differences and contextual factors. Training should cover how to spot early, subtle signs of an infestation, when and how to get help, and how to use screens, insect repellents, and appropriate waste disposal to prevent fly exposure. These tactics are particularly applicable in low-resource or remote areas where access to follow-up care may be limited.

This case report advances clinical knowledge by reaffirming that prevention depends on a combination of systemic, environmental, and patient-specific factors and that uncommon parasitic infections can arise in anatomical locations that are otherwise disregarded. Clinicians around the world may come across cases that were previously thought to be geographically or contextually limited as global migration, climate change, and urbanization continue to impact vector patterns. To create scalable preventive interventions and inform region-specific guidelines, more research on species taxonomy, geographic distribution, and host interaction is necessary. By doing this, we can ensure safer outcomes for surgically treated and medically fragile individuals in all settings and get closer to bridging the gap between acute hospital care and home-based recovery.

REFERENCES:

1. Blejter, J. (2012). Tracheostomy Wound Myiasis in a Child: Case Report and Review of the Literature. Case reports in pediatrics. https://doi.org/10.1155/2012/317862
2. Cuestas, D., Pedraza, J., Herrera, H., Motta, A., Cuestas, A., Forero, Y., Porras, R., Urrea, F., Galvis, D., Galvis, I., Bernal, M. A., Alvarado, M. V., Bula, R., Velasquez, O., Villalba, D., Lamus, S., Ariza, G., Bayona, N., Gutierrez, A., Segura, A., … Rolon, M. (2021). Cutaneous myiasis in skin cancer and malignant wounds: a systematic review. International journal of dermatology, 60(12), 1529–1546. https://doi.org/10.1111/ijd.15672
3. Dolinaj, V., Grujić, J., Križanović, D., Potkonjak, A., Pape, T., & Banović, P. (2023). The Price of Hospital Reshaping: Nasal Myiasis Caused by Flesh Fly (Diptera: Sarcophagidae) in Reallocated COVID-19 Intensive Care Unit. Healthcare (Basel, Switzerland), 11(11), 1533. https://doi.org/10.3390/healthcare11111533
4. Francesconi, F., Lupi, O. (2012). Myiasis. Clinical Microbiology Reviews, vol. 25, no. 1, 2011, pp. 79-105 https://doi.org/10.1128/cmr.00010-11
5. Franza, R., Leo, L., Minerva, T., & Sanapo, F. (2006). Myiasis of the tracheostomy wound: case report. Acta otorhinolaryngologica Italica: organo ufficiale della Societa italiana di otorinolaringologia e chirurgia cervico-facciale, 26(4), 222–224.
6. Rana, A. K., Sharma, R., Sharma, V. K., Mehrotra, A., & Singh, R. (2020). Otorhinolaryngological myiasis: the problem and its presentations in the weak and forgotten. Ghana medical journal, 54(3), 173–178. https://doi.org/10.4314/gmj.v54i3.8
7. Rathish, B., & Gopinath, P. (2020). Tracheostomal myiasis: A rare clinical entity. The Indian journal of medical research, 152(Suppl 1), S59. https://doi.org/10.4103/ijmr.IJMR_1909_19
8. Ukawat, L., Pippal, S. K., & Gupta, A. (2022). Myiasis of Peristomal Sinuses Around Tracheostomy Wound: Case Report of 2 Cases. Indian journal of otolaryngology and head and neck surgery : official publication of the Association of Otolaryngologists of India, 74(Suppl 3), 4914–4917. https://doi.org/10.1007/s12070-021-02449-4