Article published online: 2023-12-05

Myiasis Infestation After Hand Elective Surgery: Report of a Case

Infestación por miasis después de cirugía electiva de la mano: Reporte de un caso

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Rev Iberam Cir Mano 2023;51(2):e120–e123.

Abstract

Myiasis is a Greek-derived term (myia = fly) that describes infestations caused by maggots from Diptera order. It may present in a myriad of forms, but usually does in the cutaneous form, with migratory larvae infestation of the skin. We treated a two-year-old female patient who presented with syndactyly due to congenital constriction bands (Fig. 1). She developed an atypical case of myiasis infestation in post operative period. Parasite infestation due to Diptera order insects (myiasis) is a scaring event for patients and even for the assisting healthcare team. Despite not so frequent, the potential of complications such as secondary bacterial infection and invasive disease that may lead to death shall be considered, so that the condition severity cannot be minimized.

Keywords
- myiasis
- infestation
- construction band syndrome

Abstracto

Miasis es un término de origen griego (myia = mosca) que describe las infestaciones causadas por gusanos del orden Diptera. Puede presentarse en innumerables formas pero generalmente lo hace en forma cutánea con larvas migratorias que infestan la piel. Tratamos a una paciente de dos años de edad que presentó sindactilia por bandas de constricción congénita (Fig. 1). En el postoperatorio desarrolló un caso atípico de infestación por miasis. La infestación parasitaria por insectos del orden dípteros (miasis) es un acontecimiento aterrador para los pacientes e incluso para el equipo sanitario que los asiste. A pesar de no ser tan frecuentes se debe considerar el potencial de complicaciones como infección bacteriana secundaria y enfermedad invasiva que

Palabras clave
- miasis
- infestación
- síndrome de la banda de construcción

received
October 26, 2021
accepted
October 9, 2023

DOI https://doi.org/10.1055/s-0043-1776982.
ISSN 1698-8396.

Thieme Revinter Publicações Ltda., Rua do Matoso 170, Rio de Janeiro, RJ, CEP 20270-135, Brazil

Introduction

Myiasis is a Greek-derived term (*myia* = fly) that describes infestations caused by maggots from *Diptera* order, as opposed to other infestations caused by general insects.[1] Those diseases may present in several ways, the most common being the cutaneous form,[2] that is further subdivided into furuncular, migratory and wound-associated forms. Despite the recognized beneficial effects of maggots as a means of wound biological debridement, such as popularized by William Baer during the First World War,[3] along with the fact of helping to prevent severe, infectious events and sepsis, not always those agents behave so innocuously. There are several reports of secondary bacterial infection, mainly due to *Staphylococcus aureus* and group-B *Streptococcus*,[4,5] together with the invasion of noble structures and patient death.[6]

Parasite infestation due to *Diptera* order insects (myiasis) is a scaring event for patients and even for the assisting healthcare team. There are several predisposing factors, including low income status, poor hygiene, physical or mental vulnerabilities, and pre-existing skin pathology.

We describe the first case of a healthy patient submitted to hand elective surgery that evolved to an early postoperative myiasis infestation.

Case Description

We treated a two-year-old female patient who presented with syndactyly due to congenital constriction bands (►**Fig. 1**).

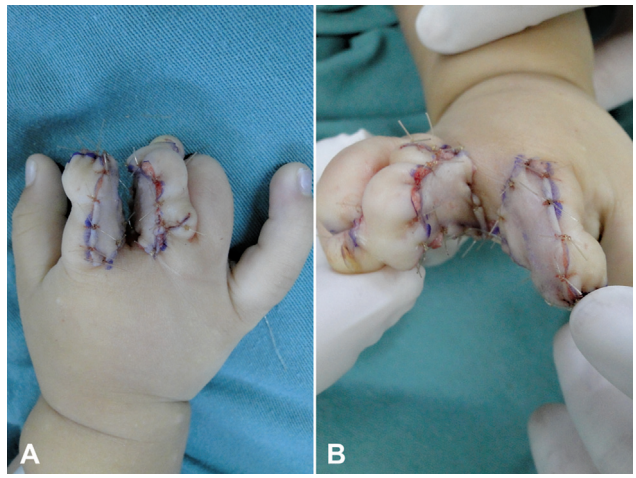

Fig. 2 Early postoperative after treatment for syndactyly due to congenital constriction bands where a dorsal digital skin flap was performed to create the interdigital space employing full-thickness skin grafting from the groin (**A** and **B**).

The patient did not present any other immunodeficiency-predisposing illness, and resided at a low-income, urban settlement. She was submitted to syndactyly-correction surgery by means of a dorsal flap to create an interdigital space associated to full-thickness, autologous skin grafting from the groin region. Procedure had been uneventful, and the patient was discharged the next day with protection dressing; the parents were instructed to keep dry and clean the surgical site (►**Fig. 2**).

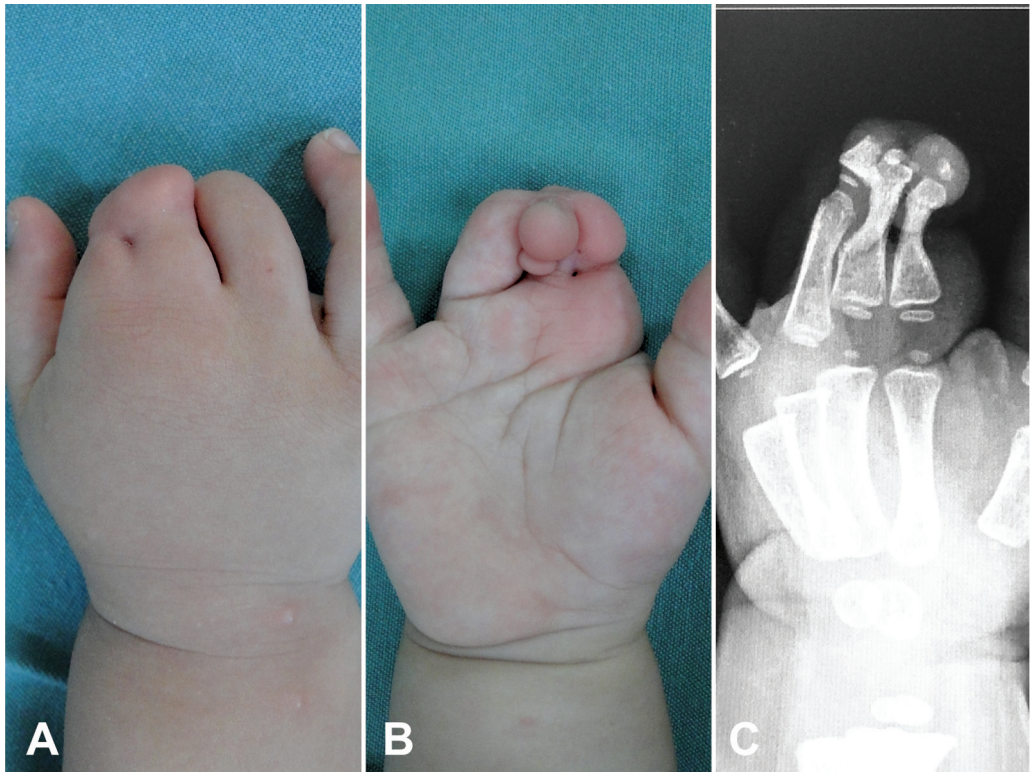

Fig. 1 Clinical aspect of two-year-old female patient with syndactyly due to congenital constriction bands (**A** and **B**). Affected hand radiograph (**C**).

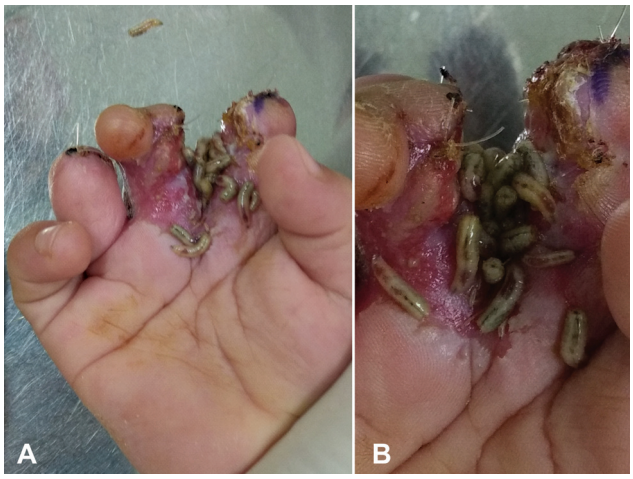

Fig. 3 Dressing change after 10 days postoperatively showing extensive operative wound infestation with maggots (**A** and **B**). Patient was admitted after cleaning and debridement and treated with ivermectin and antibiotics.

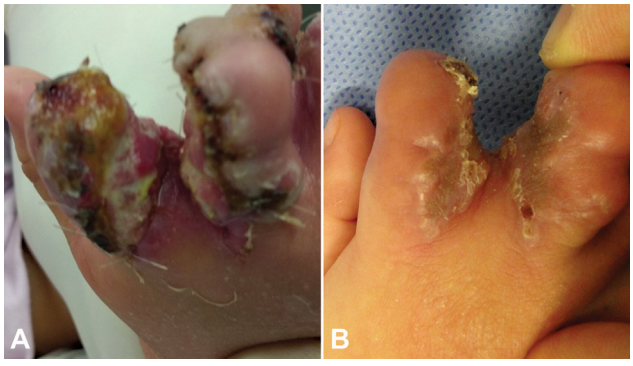

Fig. 4 Patient clinical appearance after wound cleaning and maggot removal (**A**). Complete wound healing, with no infection signs after 30 days (**B**).

Around ten days after discharge, the patient returns for assessment and dressing change; at this time, extensive migratory maggot infestation was observed (►**Figs. 3A** and **3B**).

After cleaning, devitalized tissue debridement and careful parasite removal, the pediatric infection service was called to scene and they decided for adjuvant treatment with oral ivermectin and first-generation cephalosporin antibiotics due to the great extension of the disease (under close supervision, as the age group was not ideal for the use of the first agent). Hospital admission lasted ~96 hours, and the patient was discharged in good clinical condition. Around 30 days after discharge, the wound was in an advanced healing stage, with signs of neither infestation nor secondary bacterial infection (►**Fig. 4**).

Discussion

Maggot infestations of *Diptera* insect order, the so-called myiases are relatively common events, especially in tropical, underdeveloped countries; they bring about a strong stigma, as the general population – and even health professionals – feel greatly repulsed the illness. Those insects need live, warm tissue for egg-laying and maggot production in short-duration cycles.

It is also a problem associated to endemic zone travel and may represent, along with systemic febrile diseases and acute diarrhea, up to 12% of travel-associated illnesses.[7] The typical host is either a low-income individual or someone with any kind of vulnerability (such as mental retardation, immunosuppression, or visual impairment), which favors the contact of the fly with the crude area to deposit the eggs and to develop such opportunistic diseases. Bad hygiene is also associated to myiases.

There are thousands of insect types that may cause myiasis, but very few species comprise most diagnosed cases; the *Dermatobia hominis* is the most common cause of myiasis in the Americas.[8]

Myiasis, in its cutaneous form, may present in three forms: furuncular; migratory; and associated to wounds.[8]

This case presents a maggot-infested operatory wound, as it has been reported that larvae show predilection for hemorrhaged, necrotic, or purulent-draining tissue, along with their preference for alkaline environments.[9]

The standard treatment for this kind of disease consists of complete agent removal[10]; an ether or chloroform oily solution may be employed as a parasite immobilizer agent. Topical application of ivermectin may be associated as an alternative or adjuvant modality. Oral ivermectin has also been described and was employed for the treatment of our patient.[11]

Correct agent identification is not always possible, and involves a careful, professionally trained macro- and microscopic analysis of the maggot. Correct larvae preservation depends on their termination with hot (not boiling) water immersion and subsequent conservation in an alcoholic solution[12].

There are literature reports on myiasis of a hand wound, but this is the first case reported after elective surgery of a healthy patient.

Conclusion

There should be awareness regarding patient orientation and supervision, especially for those submitted to surgical treatment and in a situation of social vulnerability to avoid such stigmatizing condition.

Given the risk of potential complications such as bacterial superinfection, prompt prophylactic antibiotic therapy must be implemented.

Statement of Informed Consent

Informed consent was obtained from all individual participants included in the study.

Human and Animal Rights Statement

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008 (5). Informed consent was obtained from all patients for being included in the study.

Statement of Funding
This study was funded by the authors.

Conflicts of Interest Statement
The authors declare that there is no conflict of interest.

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