



## Ophthalmomyiasis as a cause of canalicular lesion

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### Abstract

**Objective:** Myiasis is the invasion of human tissues by Diptera larvae. Ocular involvement is uncommon. Trauma is the major cause of lacrimal apparatus lesions. However, it is rarely associated with parasitic infestation. The objective of this paper is to report a case of canalicular laceration caused by *Dermatobia hominis* larva.

**Description:** An eight-year-old girl presented preseptal cellulitis that was refractive to antibiotics. A *Dermatobia hominis* larva was observed inside the lacrimal sac. Surgical extraction was performed and laceration of the lacrimal drainage system was noted.

**Comments:** Parasitic infection of the lacrimal apparatus is rare. Surgical extraction is the treatment of choice in such cases. Despite being uncommon, ophthalmomyiasis should be considered as a possible diagnosis when cellulitis is not responsive to antibiotics, especially in endemic areas. This is the first description of lacrimal drainage system injury by *Dermatobia hominis* larva.

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### Introduction

Myiasis is the invasion of human tissue by the larva of a fly of the order Diptera. There are more than 85,000 Diptera species. Few, however, cause ocular injuries.<sup>1</sup> Ocular involvement is responsible for 5% of all cases of myiasis and is denominated ophthalmomyiasis.<sup>2</sup> Keyt was the first to describe a case of ophthalmomyiasis in 1900.<sup>3</sup> It can be classified as internal or external (depending on whether or not the ocular bulb is penetrated) or orbital.<sup>4</sup> When larvae reach the intra-ocular space they can be located in the anterior chamber, vitreous body or the sub-retinal space.<sup>5,6</sup>

External ocular infestation is more common than internal and the most common etiologic agent is *Oestrus ovis*.<sup>7,8</sup> In these cases larval invasion usually occurs in the conjunctiva.<sup>9</sup> Ophthalmomyiasis can also be associated with larvae of *Cuterebra*, *Dermatobia hominis* and *Hipoderma bovi*.<sup>7</sup> *Dermatobia hominis* is the primary cause of cutaneous myiasis in South and Central America. Ophthalmomyiasis is rare in countries with cold climates such as Germany and North America, being most common in rural areas of developing countries.<sup>9-11</sup>

The female *Dermatobia hominis* deposits its eggs in the abdomen of an insect. After six days the eggs mature. When the insect lands on a human being these eggs are deposited on the skin or mucosa and hatch, stimulated by the heat. The larva measures, during the initial stage, approximately 1.5 mm and penetrates the skin of the host in a few minutes. It positions itself so that the caudal respiratory spiracle remains outside of the host and the anterior spiracle inside, allowing it to feed. Larvae can invade the conjunctiva and ocular bulb, provoking conjunctivitis, corneal ulcer and destruction of the ocular bulb, eyelids and orbit, since it feeds on the surrounding tissues. After 10 weeks, the larva falls onto the ground and pupates, finally becoming an adult fly.<sup>12</sup>

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The objective of this paper is to present a rare case of canalicular lesion secondary to ocular infestation by *Dermatobia hominis*.

**Case description**

An eight-year-old child was admitted at the pediatric emergency room complaining of ocular hyperemia, pain, right palpebral edema and fever lasting 3 days (Figure 1).

Ophthalmological investigation and computerized tomography of the orbit revealed preseptal cellulitis and a well-defined mass in the lower medial portion of the right orbit (Figure 2). Diagnostic hypotheses raised were infected tumor or burst dermal cyst. Treatment was begun with intravenous oxacillin and chloramphenicol and 1% topical chloramphenicol eye drops. After 13 days there was clinical improvement in the infection and the patient was discharged from hospital with a prescription for oral cephalexin.

On the following day, however, the child presented fever peaks and worsening of the palpebral edema. On examination a larva was observed in the medial portion of the lacrimal sac. Surgical extraction of the larva, identified as *Dermatobia hominis*, was curative (Figure 3). A lesion

of the upper lacrimal canal caused by the larva was observed (Figure 4). Canalicular reconstruction was performed by means of intubation with a Crawford probe.

**Discussion**

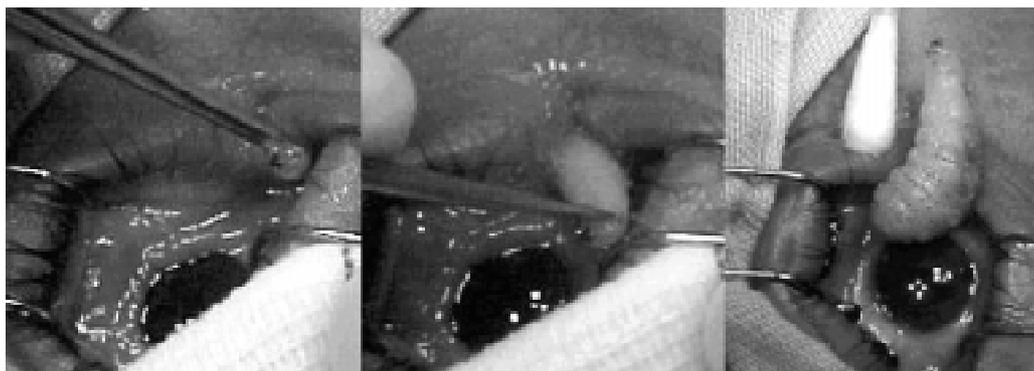
Cutaneous myiasis often presents with an injury similar to a furuncle, with a small orifice causing purulence and pain.<sup>12</sup> In the case described there was no injury to the eyelid observed which would suggest that the larva had entered and it is therefore probable that invasion had been via the conjunctiva. It is, however, important to point out that there may be ocular involvement even when the entry point is not proximal to the ocular region, as described by Engelbrecht in a description of external ophthalmomyiasis in which the primary site was in the cheek.<sup>11</sup>



**Figure 1** - Preseptal cellulitis



**Figure 2** - Computerized tomography of the orbit revealed a well-defined mass in the lower medial portion of the right orbit



**Figure 3** - Surgical extraction of the larva



**Figure 4** - Lesion of the upper lacrimal canal caused by the larva

Periorbital tissues that have been compromised by surgery, tumors, infections or ischaemia may predispose towards myiasis since the flies feed on exudates, blood, secretions and decomposing tissue.<sup>9</sup>

When the causes of lacrimal drainage system injuries are analyzed, canalicular lacerations are most frequent, in general associated with traumas (dog bites, collisions, falls, etc.).<sup>13</sup> Parasitic infestation is a rare cause of tear duct disorders. Other parasitic infestations, equally rare, such as by *Candida albicans* or *Aspergillus sp*, only cause chronic dacryocystitis.<sup>14</sup> No references to canalicular wall destruction, as in the present case, simulating traumatic laceration, were found in the literature investigated.

Surgical extraction is recommended as the treatment of choice. Other techniques are frequently used in developing countries, such as covering the wound with oily substances, like vaseline. These are not to be recommended however since the larva remains *in situ*, dying and causing granuloma of the foreign body, which may inflame or progress to calcification.<sup>12</sup> Recently, the use of ivermectin was described for myiasis treatment.<sup>15-17</sup>

Although uncommon, ophthalmomyiasis should be considered as a possible differential diagnosis when cellulitis is refractive to conventional treatment, particularly in endemic areas. Emborsky & Faden published a similar case of ophthalmomyiasis that was diagnosed after unsuccessful clinical treatment for periorbital

cellulitis.<sup>18</sup> Delays in seeking medical attention can lead to dramatic cases of total loss of the ocular bulb as described in two descriptions from India.<sup>3,9</sup>

This is the first description of lacrimal drainage system injury by *Dermatobia hominis* larvae.

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