



## CASE REPORT

# Oral Myiasis—A Pauper's Affection: Case Reports and a Review of 62 Cases

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## ABSTRACT

Oral myiasis is a rare disease caused by infestation of larvae of certain dipteran flies. It is reported mostly in developing, tropical countries. The warm and humid climate along with local factors, such as poor oral hygiene and neglect forms a conducive environment for larvae and predisposes toward the disease. This disease often manifests in patients with low socioeconomic backgrounds, debilitating condition, and poor living conditions. Herein, we describe a series of three cases of different presentations of oral and facial myiasis and also discuss the predisposing factors and challenges in the treatment by reviewing a list of 62 cases in recent literature.

Through this review and reports, we hope to spread awareness regarding the not so uncommon, but easily preventable disease of oral myiasis and initiate proper research in this neglected section of disease.

**Keywords:** Facial myiasis, Ivermectin, Maggots, Oral myiasis, Traumatic myiasis, Turpentine.

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## INTRODUCTION

Oral myiasis is a gruesome, debilitating disease of the less fortunate. Described in 1909 by Lawrence, this disease continues to plague the underdeveloped and developing countries, especially in the tropical regions. The warm and humid climate along with local factors, such as poor oral hygiene and neglect forms a conducive environment for larvae and predisposes toward the disease.

It is of no surprise then that most cases of oral myiasis occur in mentally retarded, bedridden, debilitated, malnourished individuals usually associated with a condition that prevents them from maintaining personal hygiene and makes them dependent on the

caregiver. These individuals are invariably from the lower socioeconomic strata and cannot afford proper nursing care.

Oral myiasis has been found not only in patients with mental deficits but also in alcoholics, people with depression, and children unfortunate enough to live in neglected households.

Herein, we describe a series of three cases of different presentations of oral and facial myiasis and also discuss the predisposing factors and challenges in the treatment by reviewing a list of 62 cases in recent literature.

## CASE REPORTS

### Case 1

A 43-year-old male presented with a large through and through ulcer of the lower lip since 1 week (Fig. 1). The patient gave a history of binge drinking 10 days back during which he fell down and sustained trauma to the lower lip. The wound was allegedly sutured at a local hospital. However, 3 days later, the patient developed swelling and gaping of the wound site. The relatives also gave history of worms falling from the wound. The patient was poorly built, alcoholic, and appeared mentally unsound. Local examination revealed a 4 × 3 cm necrotic ulcer, involving the full thickness of the lower lip, with undermined edges (Fig. 2). Multiple crevices infested with larvae were seen within the lesion (Fig. 3). The surrounding mucosa was inflamed and tender to



**Fig. 1:** Initial presentation of the patient representing ulcer on the lower lip

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Fig. 2: Communication of the ulcer intraorally



Fig. 3: Larvae seen deep within the cavity

palpation, and there was slight bleeding and discharge present. Pus was sent for culture and sensitivity. Routine blood investigations and liver function tests were within normal limits. Serostatus was negative.

Differential diagnoses of squamous cell carcinoma, cellulitis, foreign body reaction, and tungiasis were considered. However, the presence of larvae directed our diagnosis toward a larval parasitic infestation. A diagnosis of oral myiasis was made. The maggots were removed manually from an area deep within the wound. Sterile gauze impregnated with turpentine oil was placed at the orifice for several minutes. A biopsy was sent to rule out carcinoma as we considered the history unreliable. Patient was prescribed cefixime 200 mg BD and metronidazole 400 mg TDS for 3 days as a prophylactic measure. The wound was dressed with betadine solution. The larvae were mechanically removed for next two consecutive days with exploration, curettage, and warm saline and betadine irrigations till no further larvae could be found. No antiparasitic drugs were administered. Scaling and polishing of teeth were done to improve oral hygiene and patient was also advised chlorhexidine mouth rinses for 10 days.

The maggots were 12 to 15 mm long, whitish and without obvious body processes (Fig. 4). They were identified as *Chrysomya bezziana* species by the Department of Microbiology and Parasitology. The biopsy only revealed inflammatory tissue with no evidence of dysplasia or carcinomatous features.

The patient was followed up regularly for 1 month. The swelling reduced and healthy granulation tissue was seen within 1 week. At the end of 3 weeks, the communication closed spontaneously. No secondary suturing was done. At 1-month follow-up, the wound had healed completely (Figs 5A to D). The patient refused secondary revision of the scar for improvement of cosmesis.



Fig. 4: Larvae retrieved from the wound identified as *C. bezziana* species

## Case 2

A 54-year-old female patient reported to the department with a large necrotic ulcer over the left side of the face. The woman was a homeless person and was brought by few social service volunteers. The patient was poorly built and malnourished. Poor oral hygiene was evident. The patient was unable to speak properly and thus no history as to the duration or the nature of lesion was elicited. On examination, a large necrotic ulcer with jagged margins was seen on the right side of the face. The ulcer was putrid, foul-smelling, and larvae could be seen crawling in some of the crevices. It involved the entire angle of the mouth, which had sloughed off and the oral cavity was visible through the defect. The lesion was approximately 7 × 7 cm. The right halves of both upper and lower lip had sloughed off. The remaining upper and lower lip, and margins and surrounding areas were erythematous and tender to palpation (Fig. 6).

Multiple larvae were seen within the crevices of the lower lip and cheek margins. The larvae were



**Figs 5A to D:** Secondary healing of the wound: (A) Postoperative day 3: No more larvae are seen; (B) postoperative 1 week: Healthy granulation tissue; (C) Postoperative 3 weeks: Spontaneous closure of communication; and (D) postoperative 1 month: Residual deformity



**Fig. 6:** Initial presentation of the patient of second case

whitish-yellow, 12 to 15 mm in length, with no obvious body processes.

Differential diagnoses of noma (cancrum oris), squamous cell carcinoma, cellulitis, and acute necrotizing fasciitis were considered. Presence of larval forms made it evident that this was a case of oral myiasis. As to whether

it was primary oral myiasis or secondary to trauma or carcinoma, we could not ascertain, because the patient refused biopsy and any investigations.

Under local anesthesia, the wound was debrided using hydrogen peroxide. Larvae were removed using tweezers. A turpentine dressing was placed in the wound for several minutes and more larvae were removed. The patient was advised admission but she refused. The patient was given antibiotics and asked to return for regular debridement. Unsurprisingly, the patient did not follow-up.

### Case 3

A 47-year-old female patient was admitted to our ward following a complaint of worms falling from her nose. The patient first noticed it 2 days before presentation. She had no complaints of pain but only a stuffy feeling in her nose and occasionally a crawling and itching feeling near the back of her throat. The patient lived with her family and although poor, showed no other concomitant disease or mental deficits. She gave no history of any systemic illness and all routine blood investigations were normal.

Oral examination showed poor oral hygiene, periodontitis, and halitosis; however, no obvious lesion was seen intraorally. Nasal examination using a speculum revealed about 15 to 20 larvae in the nasal cavity near the inferior and middle turbinates. There was no evidence of any disruption of the anterior nasal mucosa. The larvae were similar to the ones described earlier. A working diagnosis of nasal myiasis was given. The absence of any contributing factor, such as trauma to the area or any predisposing factor related to the patient was surprising. However, the classical larvae elicited from the nose helped us clinch the diagnosis.

They were removed one by one using tissue forceps. A nasal pack with turpentine oil was placed for approximately 10 minutes. No further larvae were seen. Patient was put on antibiotics and ivermectin 6 mg orally for 3 days. The turpentine dressings were performed twice daily. A few larvae were extracted on the 2nd day but none after that. Patient was discharged after 3 days with personal hygiene instructions. No episode of larvae was seen for 3 months after which the patient was lost to follow-up. This was a unique case in which an apparently normal healthy patient without a wound developed myiasis. Poor living conditions and improper personal hygiene were probably the only predisposing factors in this case.

## DISCUSSION

Oral myiasis is a rare disease which is caused by infestation of larvae of certain dipteran flies. It is reported mostly in developing countries and in the tropics. The term myiasis was coined by Hope.<sup>1</sup> Human myiasis is reported mainly in developing countries, such as India, Pakistan and Brazil and very rarely in Western countries.<sup>2</sup>

Cases of oral myiasis have been reported to occur following dental extraction, nosocomial infection, in drug addicts, in psychiatric patients, and in conditions that are likely to cause prolonged mouth opening, such as mouth breathing during sleep, senility, alcoholism, and mental retardation.<sup>3</sup>

Other predisposing factors are incompetent lips, poor oral hygiene, severe halitosis, anterior open bite, facial trauma, extraction wounds, ulcerative lesions, and carcinoma.<sup>4</sup>

Three major species of parasites are encountered in myiasis in wounds, The New World screwworm fly *Cochliomyia hominivorax*, the Old World screwworm fly *C. bezziana*, and Wohlfahrt's wound myiasis fly *Wohlfahrtia magnifica*.<sup>5</sup> At least 86 different species of Diptera can infect man with larvae that invade the skin and body cavities, such as the nasal fossae and ears, and cause odoriferous discharges.<sup>6</sup>

Myiasis can be classified depending on the condition of the involved tissue as

- Accidental myiasis—when larvae get ingested along with food
  - Semispecific myiasis—when the larvae are laid on necrotic tissue of the wound
  - Obligatory myiasis—in which the larvae affect undamaged skin.<sup>7</sup>

Based on anatomic site, it can be classified as

- Cutaneous myiasis,
  - Myiasis of external orifices, and
  - Myiasis of internal organs.<sup>8</sup>

Clinically, they can be classified as primary and secondary. Primary myiasis is caused by biophagous larvae (those that feed on living tissues) and also called as obligatory myiasis. Secondary myiasis is caused by the necrobiophagous larvae (those that feed on dead tissues) and also called as facultative myiasis.<sup>9</sup>

It takes 18 days for the development of *C. bezziana* from egg to adult fly. Eggs are laid by the adult female on live mammalian tissues. It lays around 150 to 200 eggs at the site of the wound. The eggs hatch after 12 to 18 hours and the first-stage larvae, white in color and 15 mm in length, will emerge from the eggs and then burrow into wound or wet tissues. The second stage is when they grow to 18 mm in length. After 5 to 7 days, larvae fall to the ground and pupate. The pupae are transformed into adult fly around 7 days later.<sup>10</sup>

*Chrysomya bezziana* differs from other maggot infestations by its ability to cause tissue invasion even without preexisting necrosis. The larvae of *C. bezziana* burrow deep into the host's healthy living tissue in a screw-like fashion feeding on living tissue.<sup>11</sup>

Incidence of oral myiasis is comparatively lesser than that of cutaneous myiasis as oral tissues are not permanently exposed to the external environment.<sup>12</sup> The risk factors for oral myiasis include suppurative lesions, trauma in the face, mouth-breathers, extraction wounds, and other conditions.

We performed an online literature search using PubMed and Medline indices with the term "oral myiasis." Thirty-seven articles were identified pertaining to oral myiasis. Most were case reports from India and Brazil (Table 1).

Maximum number of cases were from India and Brazil (39% and 33% respectively). This was followed by a case series published by Khan et al<sup>13</sup> of 11 cases in Pakistan. Few other cases were reported from other regions (Graph 1).

There was no age predilection with cases ranging from 4 to 82 years. However, males seem to be more commonly affected than females (69 to 31% respectively).

The predisposing factors appeared to be almost universally low socioeconomic status, poor oral and

Table 1: List of case reports

No.	Author	Cases	Year	Age (Years)	Sex	Country	Location	Predisposing factors	Species	Ivermectin used	Topical solutions
1	Abdo et al	1	2006	32	Male	Brazil	Upper lip	Alcoholism, living on streets	NS	Ivermectin (200 µg/kg) po	Gentian violet
2	Aggarwal et al	1	2014	70	Female	India	Anterior maxilla	Malnourishment, low socioeconomic background, poor oral hygiene	<i>Chrysomya bezziana</i>	-	Turpentine oil
3	Aguiar	1	2003	65	Male	Brazil	Alveolar mucosa, nasal cavity, upper lip, cheek	Noma, acute respiratory failure crisis, malnourishment, dehydration	NS	-	NS
4	Gabriel et al <sup>4</sup>	1	2008	NS	NS	Brazil	Floor of mouth	Malignancy	NS	-	NS
5	Carvalho et al	1	2008	NS	NS	Brazil	Buccal mucosa	Malignancy	NS	-	Antiseptics
6	Gopalkrishnan et al	1	2008	NS	NS	India	Buccal mucosa, lower lip	Malignancy	NS	-	NS
7	Pessoa and Galao	1	2011	NS	NS	Brazil	Mandible	Malignancy	NS	-	Antiseptics
8	Darshyani et al	1	2012	NS	NS	India	Mandible	Malignancy	NS	-	Antiseptics
9	Biradar et al	1	2015	NS	NS	India	Buccal mucosa	Malignancy	NS	-	NS
10-19	Autunes	10	2011	72	Male	Brazil	Upper lip	Uncontrolled diabetes	<i>Cochliomyia hominivorax</i>	-	NS
				82	Female	Brazil	Hard palate	AIDS, mentally ill		Ivermectin	NS
				39	Male	Brazil	Preauricular region	SAH, depression		Ivermectin	NS
				67	Male	Brazil	Retroauricular region	Diabetes, mouth breather		-	NS
				59	Female	Brazil	Maxilla	Squamous cell carcinoma		-	NS
				78	Female	Brazil	Retroauricular region	Uncontrolled diabetes		Ivermectin	NS
				26	Male	Brazil	Upper lip	Mental retardation		-	NS
				34	Male	Brazil	Maxilla	Mental retardation		Ivermectin	NS
				37	Male	Brazil	Right orbital	Retinoblastoma, depression		Ivermectin	NS
				40	Male	Brazil	Retroauricular region	Depression		-	NS
20	Asokan et al	1	2013	44	Male	India	Maxilla	Symphysis fracture, low socioeconomic status,	NS	Antibiotics	Turpentine oil
21	Babu et al <sup>15</sup>	1	2010	65	Female	India	Lower lip	poor living conditions	NS	-	NS
22	Bhatt et al	1	2001	12	Male	India	Mandibular gingiva	Learning disability	NS	-	Ether
23	Bhola et al	1	2012	12	Male	India	Upper lip	Neurological deficit	NS	-	Turpentine oil
24	Bozzo et al <sup>19</sup>	1	1992	24	Male	Brazil	Postextraction socket	Alcoholism	NS	-	
25	Dcoستا et al <sup>17</sup>	1	2005	55	Male	Colombia	Left orbital region	Carcinoma ethmoid sinus, low socioeconomic status	<i>Cochliomyia hominivorax</i>	Ivermectin (200 µg/kg), clindamycin IV	(Cont'd...)

(Cont'd...)

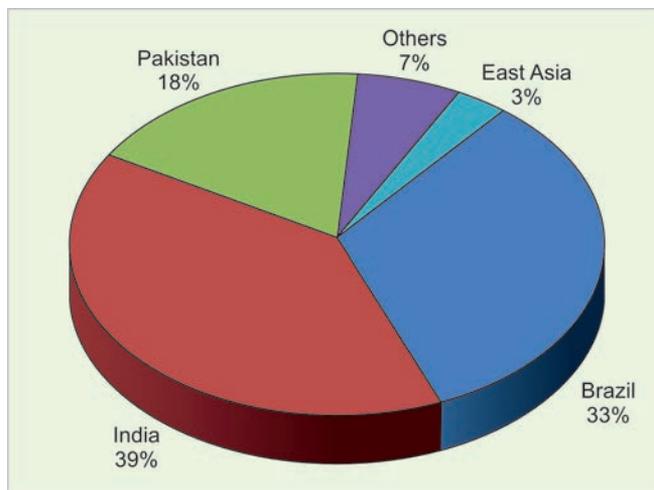
No.	Author	Cases	Year	Age (Years)	Sex	Country	Location	Predisposing factors	Species	Ivermectin used	Topical solutions
26	Dhobley et al	1	2015	55	Male	India	Chin area	Alcoholism, generalized periodontitis	NS	–	Turpentine oil
27	Felices et al	1	1996	18	Female	Argentina	Upper lip	History of vacation in Brazil, mouth breathing	<i>Cochliomyia hominivorax</i>	–	Ether
28	Gomes et al	1	2003	66	Female	Brazil	Upper anterior jaw	Alcoholism, generalized periodontitis	<i>Cochliomyia hominivorax</i>	–	Turpentine oil, BIP paste
29	Gulegud et al <sup>16</sup>	1	2014	70	Male	India	Mandible	Mandible fracture, alcoholism, poor oral hygiene	NS	–	Turpentine oil
30	Jimson et al	1	2013	40	Male	Brazil	Anterior maxilla	Low socioeconomic status, poor oral hygiene, incompetent lips	<i>Chrysomya bezziana</i>	Ivermectin 12 mg PO single dose	Turpentine oil
31–41	Khan et al <sup>13</sup>	11	2014	NS	64% Males	Pakistan	Predominantly anterior maxilla	Malignancy most commonly	NS	Two cases with ivermectin	Turpentine oil
42	Khandelwal et al	1	2016	45	Male	India	Chin area	Alcoholism, low socioeconomic status	NS	–	Turpentine oil
43	Kumar et al	1	2012	18	Female	India	Anterior maxilla	Mental retardation, bedridden, mouth breathing	<i>Musca domestica</i>	–	Turpentine oil
44	Nova-neto et al	1	2015	36	male	Brazil	Anterior maxilla	Leukoderma, severe psychomotor impairment	<i>Cochliomyia hominivorax</i>	Ivermectin 6 mg IV	NS
45	Osorio et al	2	2006	79	Male	Columbia	Left orbital region	Worked in agriculture	<i>Cochliomyia hominivorax</i>	Ivermectin (200 µg/kg) po	NS
46	Puri et al	1	2006	76	Male	India	Anterior maxilla	Mentally challenged	<i>Musca nebulosa</i> (Diptera)	Ivermectin 3 mg OD po x 3 days	Turpentine oil
47	Ng et al	1	2003	89	Female	Hong Kong	Hard palate	Bedridden, ischemic heart disease, tuberculosis, stroke	<i>Chrysomya bezziana</i>	–	NS
49	Robindro Singh et al	1	2013	56	Female	India	Upper lip	Obstructive hydrocephalus	NS	–	Turpentine oil
50	Rossi-Schneider et al	1	2007	34	Male	Brazil	Anterior maxilla	Neurological deficit, incompetent lips, generalized periodontitis	NS	–	NS
51	Sankari et al <sup>3</sup>	1	2010	14	Male	India	Anterior maxilla	Mentally challenged, fracture of anterior teeth	<i>Chrysomya bezziana</i>	–	Turpentine oil
52	Erolet al	1	2000	4	Female	India	Anterior maxilla	Inadequate personal hygiene	<i>Hypoderma bovis</i>	–	NS
53	Vinod et al	1	2016	76	Female	India	Anterior maxilla	Mouth breathing, diabetes	<i>Musca domestica</i>	Ivermectin 6 mg BD po x 3 days	Turpentine oil
54	Saravanan et al	1	2015	40	Male	India	Left cheek	Mentally disabled, epilepsy	NS	–	Turpentine oil
55	Sharma et al	1	2014	22	Male	India	Anterior maxilla	Mentally challenged, anterior open bite	<i>Musca nebulosa</i> (Diptera)	–	Turpentine oil

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No.	Author	Cases	Year	Age (Years)	Sex	Country	Location	Predisposing factors	Species	Ivermectin used	Topical solutions
56	Singh et al <sup>12</sup>	1	2015	12	Male	India	Anterior maxilla	Mentally retarded, maxillofacial trauma	<i>Chrysomya bezziana</i>	Ivermectin 6 mg OD po x 3 days	Turpentine oil
57	Shinohara et al <sup>26</sup>	1	2004	20	Female	Brazil	Anterior maxilla	Hypotonic cerebral palsy	<i>Cochliomyia hominivorax</i>	Ivermectin 6 mg OD po x 3 days	NS
58	Bhagawati et al <sup>2</sup>	1	2013	24	Female	India	Anterior palate	Mentally challenged	NS	-	Turpentine oil
59	Shah et al	1	2015	24	Female	India	Maxilla and mandible	Spastic cerebral palsy, mouth breathing	<i>Chrysomya bezziana</i>	Ivermectin 6 mg single dose po	Turpentine oil x3 days
60	Srivastava et al	1	2011	18	Male	India	Anterior maxilla	Mentally retarded	<i>Musca domestica</i>	Ivermectin 3 mg BD po x 5 days	Turpentine oil
61	Verma et al	1	2011	71	Female	India	Face	Advance periodontal disease, low socioeconomic status	<i>Musca nebulosa</i> (Diptera)	Ivermectin 6 mg OD po x 2 days	Turpentine oil
62	Wu et al	1	2012	80	Male	China	Nose	Cerebral infarction, chronic heart failure	<i>Chrysomya bezziana</i>	-	NS

NS: Not specified; BIP: Bismuth iodine paraffin; IV: Intravenous; AIDS: Acquired immunodeficiency syndrome; SAH: Subarachnoid hemorrhage



Graph 1: Geographical distribution of oral myiasis

personal hygiene. Alcoholism, cerebral palsy, and bed-ridden patients were predisposed to this condition. Oral myiasis had developed in quite a few cases secondary to malignancy (23%). Another common finding was conditions which led to the mouth being open, such as mouth breathing habit, lip incompetence due to Class 2 malocclusion, open mouth due to mental retardation, and/or muscle hypotonia. Only three of the recorded cases had immunocompromised conditions, such as human immunodeficiency virus and diabetes mellitus. This finding leans more toward the fact that patients are generally malnourished rather than pathologically immunocompromised for this disease to occur. However, one case of a healthy female reported with oral myiasis after a trip from Brazil.<sup>14</sup> Notably she had a mouth breathing habit due to deviated nasal septum.

The most common site for oral myiasis was anterior part of maxilla or the upper lip and associated tissues. Few cases involved the mandible<sup>15,16</sup> and orbital<sup>17</sup> regions.

In 1996, Lata et al<sup>18</sup> reported a case of oral myiasis in a patient with fractured mandible. Patient was unable to close his mouth due to fracture, which might have been the reason for the flies to infect the lesion. Bozzo et al<sup>19</sup> reported a case of myiasis in an extraction socket.

Yoshitomi et al<sup>20</sup> presented a unique case in which nasopharyngeal myiasis was found during mechanical ventilation in a tracheostomy wound. Droma et al<sup>21</sup> in their literature review have mentioned that incidence of myiasis is more in anterior maxillary region and men are more affected than women. Both these findings are similar to ours.

Standard guidelines for management of oral myiasis do not exist. The ideal and standard treatment plan described in most case reports includes manual removal of larvae. The simplest technique is mechanical removal of the maggots with tweezers, usually under local anaesthesia. But simple mechanical removal is not possible many



times because the larvae use hook to grip the tissues. Topical asphyxiating agents, such as ether, chloroform, olive oil, turpentine oil, petroleum jelly, and whitehead varnish are used, which act as topical irritant and block the larva's respiratory sinuses, forcing this aerobic organism to come up to the surface facilitating their removal. This method is also known as occlusion or suffocation approach. Care must be taken to prevent tearing or laceration of the larva because any portion of remaining larval part left in the wound cavity will induce an undesirable inflammation or a bacterial infection.<sup>22</sup>

Topical preparations reported to immobilize maggots for easy removal include chloroform, ether, ethanol, turpentine, oily drops, and hydrogen peroxide.<sup>23</sup>

Irrigation with betadine, saline, and chlorhexidine has been used along with mechanical debridement in all cases. Most authors also prefer antibiotics, such as penicillins, cephalosporins, and metronidazole to curb and prevent any concomitant infection as well as prophylactically, in the postoperative period.

Very few reports of treatment of myiasis with only drugs have been documented.<sup>24</sup> One of the most commonly used drugs is ivermectin, which is often given as an adjuvant to surgical debridement. Ivermectin, which is usually used in veterinary medicine, is effective in humans for the treatment of filarial, scabies, and strongyloidiasis.<sup>25</sup> This drug is said to block nerve impulses at the nerve ending by releasing gamma aminobutyric acid, causing palsy and death of larvae. Shinohara et al<sup>26</sup> documented successful treatment of this condition with only ivermectin 6 mg given orally, and repeated after 24 hours. The main advantage of using ivermectin is that it is not necessary to operate to remove the larvae. This is especially helpful if the myiasis occurs in distant inaccessible areas, such as nasopharynx and orbital regions and patient is not medically fit for general anesthesia.<sup>16</sup>

More recently, a topical agent, nitrofurazone, has been used with high success rate for the management of myiasis. Lima Júnior et al<sup>27</sup> reported the use of nitrofurazone topical application for the nonsurgical management of oral myiasis in 2010. Nitrofurazone is a topical antiparasitic agent whose derivatives possess antibacterial, antiprotozoal, and antiparasitic properties. Nitrofurazone is used at a concentration of 0.2%, which was used topically for 3 consecutive days.

Many authors advocate tetanus toxoid vaccination in affected patients as they fear the entry of *Clostridium tetani* species while trying to remove.<sup>28</sup> Although we could not find any report of this event, it appears to be a prudent measure without any side effects. Thus, it was given in all our patients.

From the above reported cases, it is evident that all patients are of low socioeconomic status having poor

living conditions, and most of them lived in rural areas with evidence of social and family alienation. This situation can be observed by the clinically advanced stage of the malignancy and its long term, indicating negligence and lack of knowledge.<sup>29</sup>

The challenge faced by the clinician in treating such cases is lack of patient motivation and cooperation, as was seen in our second case report. Also, due to these patients being poor, there is no financial stimulus for aggressive treatment strategies. Most patients are bedridden and terminal and, even with proper treatment, may succumb to other conditions that are invariably present in this case. In our review, five patients succumbed to other medical conditions during or after the treatment of myiasis. This overall poor prognosis further deters clinicians and caregivers from giving adequate treatment. Hence, the best approach would be by prevention.

Myiasis of orofacial region can be prevented by educating the people from rural areas and low socioeconomic groups about personal hygiene, taking care of any wound, control of fly population, and maintenance of sanitation of the surroundings.

Paradoxically, therapeutic use of maggots in healing of chronic ulcers has been described in literature.<sup>30,31</sup> Maggots separate the necrotic tissue from the living tissue, making surgical debridement of the wound easier. They have been used in nonhealing necrotic skin and soft tissue wounds, pressure ulcers, venous stasis ulcers, and nonhealing traumatic or postsurgical wounds.

## CONCLUSION

It is unfortunate and also alarming for the society that such cases continue to occur with such frequency even in this age of advanced medical care and information technology. The very nature of the disease and the patients who present with it deter the caregivers and clinicians from giving treatment, hence most of these patients are treated in free institutes, that too, reluctantly.

Through this review and reports we hope to spread awareness regarding the not so uncommon, but easily preventable disease of oral myiasis and initiate proper research in this neglected section of disease.

Research in this area is limited to isolated case reports or few case series with no efforts toward exploring new preventive measures and treatment modalities. As the disease rarely occurs in well-developed nations, the burden of this effort lies on the clinicians of the tropical underdeveloped and developing countries who come across maximum number of these cases, even though the lack of patient motivation, financial constraints, and lack of infrastructure make this a daunting and unpleasant task.

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