INTRODUCTION

The term Myiasis is derived from the Greek word “myia” which means fly and “sis” meaning condition. Fritz Zumpt described myiasis as “the infestation of live humans and vertebrate animals with dipterous larvae, which at least for a certain period, feed on the hosts’ dead or living tissues, liquid body substances or ingested food”. Eighty different species of Diptera have been known to invade man. The term myiasis was coined by Hope in 1840 and the first case of Oral myiasis was described by Laurence in 1909. Oral myiasis is the condition in which there is an invasion of oral tissues or wound with larvae of houseflies commonly known as maggots. It occurs as a result of female flies depositing eggs or larvae on open wounds or decaying tissues. The larvae hatch in the tissues and later migrate out in an attempt to reach the soil to pupate. The flies lay over 500 eggs and hatch in less than a week and their life cycle is completed within two weeks. The larvae obtain their nutrition from their surrounding tissues and burrow deeper into the soft tissues by making tunnels separating the mucoperiosteum and gingival from the underlying bone. Conditions leading to persistent mouth opening along with poor hygiene, supplicative lesions, severe halitosis and facial trauma may predispose the patient to oral myiasis. It has been reported among epilepsy patients with lacerated lips following a seizure, incompetent lips and thumb sucking habits, advanced periodontal disease, at tooth extraction sites, fungating carcinoma of buccal mucosa and patient with tetanus with mouth propped open to maintain his airway. The aim of this paper is to report a extensive case of oral myiasis in the maxillary anterior region of a mentally challenged patient with cleft lip.

CASE REPORT

A 20-year-old mentally challenged male patient with cleft lip and of low socioeconomic status having poor living conditions presented to the department of Oral Medicine and Radiology with a chief complaint of painful swelling on the face and presence of worms in the mouth as noticed by his family members since three days. History revealed he underwent trauma to the tooth 7 days back leading to displacement of the upper left front tooth. Initially he noticed bleeding gums which rapidly progressed to painful swelling. He had not taken any medication and not undergone any treatment previously. He had a history of mouth breathing and habit of sleeping in cattle house.
Extra oral examination revealed incompetent lips, upper lip and facial swelling (Figure 1).

**Figure 1:** Extraoral view showing cleft lip and avulsed tooth (21)

Intraoral examination revealed an avulsed tooth in relation to 21. A necrotic areas leading to exposure of the bone with moving worm like objects (maggots) in maxillary anterior region. A tunnel containing many maggots found in right labial vestibule leading to the infraorbital margin (Figure 2). A solitary soft and fluctuant swelling with a draining sinus was noticed on the palatal aspect of 21 region suggestive of palatal abscess (Figure 3).

**Figure 2:** Intraoral view showing tunnel containing maggots in right maxillary labial vestibule.

**Figure 3:** Intra-oral view showing avulsed tooth, necrotic areas on maxillary anterior region and maggots.

The patient had poor oral hygiene, intense halitosis. In addition, general symptoms including pain, fever and malaise were present. Based upon the history and presence of maggots, provisional diagnosis of oral myiasis was made. Hematological investigations were within normal limits. Patient was referred to Department of Oral and Maxillofacial Surgery where cotton bud impregnated with turpentine oil was placed at the orifice of the tunnel for approximately 10 minutes. 45-50 maggots were manually removed with the help of tissue holding forceps and taken for entomological examination. The same procedure was repeated for two more days. Further management included extraction of the periodontally involved teeth followed by curettage and placement of metrogyl pack. Oral therapy with ivermectin 6 mg once daily for two days was advised.

The larvae recovered from the wound were preserved in formaldehyde (40%). They appeared tapered in shape and creamy white in colour, their segments giving the appearance of transverse rows, with a brown-black tip anteriorly and were identified as larvae of Chrysomya bezziana (botfly) by an entomologist (Figure 4). Postoperative healing was uneventful (Figure 5) and patient has been under regular follow up.

**Figure 4:** Collected maggots.

**Figure 5:** Post-operative picture after 20 days.

**DISCUSSION**

Myiasis is caused by members of Diptera fly family that lay eggs on food, necrotic tissue, open wounds, and unbroken skin or mucosa (Gomez et al. 2003). Based upon the degree of dependence on the host, Myiasis can be classified as obligatory (when larvae develop in living tissue) and facultative (when maggots feed on necrotic tissues). Myiasis can also classified clinically as primary (larvae feed on the living tissue) and secondary (larvae feed on dead tissue). The
most common anatomic sites for myiasis are nose, eye, lung, ear, anus, vagina and more rarely mouth. This is common in low socio-economic status people with neglected oral hygiene and physical or mental retardation. Incidence of oral myiasis as compared to that of cutaneous myiasis is less as the oral tissues are not permanently exposed to the external environment.6,7 Musca Nebulo is the commonest Indian housefly. They are seen in abundance in human dwellings and are very active during summer and rainy season. The lifecycle of a fly begins with egg stage followed by the larvae, pupa and finally the adult fly. The conditions required for egg laying and survival of the larvae are moisture, necrotic tissue and suitable temperature. Thus wounds, open sores, scabs, ulcers contaminated with discharges facilitate the same. The patient in the present case was of low socio-economic status having poor living conditions.3,6 Persistent mouth opening due to incompetent lips with poor oral hygiene and periodontal disease as seen in our case are the most commonly known predisposing factors for oral myiasis. In addition, the mentally challenged patient was physically dependent on his family members for day-to-day routine activities which could be thought of as a contributing factor to his neglected oral hygiene. Predisposing factors (poor oral hygiene) were thought to provide an ideal opportunity for the flies to lay eggs. The developmental transition via the larval stage requires an intermediate host. An existing poor oral environment contributed for the mechanical support and suitable substrate and temperature for the survival of the larvae. The stage of larvae lasts for six to eight days during which they are parasitic to human beings. The larvae have backward directed segmental hooks with which they anchor themselves to the surrounding tissue. They are photophobic and tend to hide deep into the tissues for a suitable niche to develop into pupa.3,5,8 The present case also showed the larvae burrowed deep and make tunnel in the right labial vestibule. The presence of these hooks makes manual removal of larvae from the host difficult. So when multiple maggots are detected as observed in our case, elimination can be achieved with agents like turpentine oil or topical irritants such as ether, chloroform, olive oil, calomel, iodoform and phenol mixture.4,7 These larvae release toxins to destroy the host tissue. Proteolytic enzymes released by the surrounding bacteria decompose the tissue and the larvae feed on this rotten tissue. The infected tissue frequently releases a foul smelling discharge. The necrotic ulcer with a palatal abscess and intense halitosis seen in the present case is suggestive of the destruction caused by toxins released by the larvae. Treatment consisted of manual removal of maggots, broad spectrum antibiotics and oral therapy with Ivermectin. Ivermectin is a semi synthetic macrolide antibiotic isolated from streptomyces avermitilis and has been found to be an efficient and safe method for treatment of myiasis.4,5,8

CONCLUSION
As the old saying goes “prevention is better than cure” the disease should be prevented by controlling fly population, maintaining good oral and personal hygiene such as reducing the decomposition odour, cleaning and covering the wounds and by educating the susceptible population where basic sanitation is meager. Special care needs to be taken in medically compromised dependent patients as they are unable to maintain their basic oral hygiene. Though oral myiasis is a rare condition, the clinician should also consider the socio economic condition along with poor oral hygiene before treating the patients in the dental office.

REFERENCES