

Case Report

Open Flap Debridement in the Treatment of Periodontal Myiasis: A case report

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Myiasis is an infestation of live vertebrate by dipterous larva, which feeds on living and dead host tissue, host products and byproducts. Here, we report a case of a female aged 35 years old, mentally retarded presented with severe pain, swelling, crawling worms in the upper teeth and lip region. She was a chronic mouth breather with very poor hygiene. On clinical examination, a larva was seen in the periodontal pocket with relation to teeth #21 and 22, which was later by entomological examination identified as *Chrysomya bezziana*. The patient was managed by mechanical removal of the larva from pocket using turpentine oil and then by open flap debridement with removal of all maggots. This case report emphasizes the importance of oral hygiene instruction, motivation and education in mentally challenged patients. Controlling fly vector population, maintaining good oral and personal hygiene contributes in checking this infestation.

Key words: Myiasis, mouth breather, oral hygiene, *Chrysomya bezziana*.

INTRODUCTION

The term myiasis was coined by Hope (1840) is derived from Latin word 'muia' which means fly and 'iasis' means disease. It is an infestation of live vertebrate by dipterous larvae which feeds on living or dead host tissue, liquid body substances, or undigested food (Gomez et al., 2003). It occurs frequently in countryside areas, infects live stocks, pets and in malnourished, medically compromised individuals in third world countries (Rossi-Scheider et al., 2007). Myiasis can be primary when larvae feed on living tissue and secondary when larvae feed on dead tissue (Shinohara et al., 2004). The most common anatomic sites for myiasis are the nose, eye, lung, ear, anus, vagina and rarely oral cavity (Abdo et al., 2006). Oral myiasis was first described by Laurence (1909). Persistent mouth opening as in chronic mouth breathers, poor oral hygiene, suppurative lesions, severe halitosis and facial trauma may predispose the patient to oral myiasis (Abdo et al., 2006). Here we report a case of

myiasis in which the maggot were found in the periodontal pocket in the upper anterior region of a chronic mouth breather and its subsequent management.

CASE REPORT

A 35 year old female reported with severe pain and swelling in the upper anterior teeth and upper lip was used as the case study. The patient complained of something crawling inside her upper anterior gums on the right side. She was mentally retarded and belonged to low-socioeconomic strata.

On clinical examination, her upper anterior teeth were protruded and there was spacing between them. She was a chronic mouth breather as it was evidenced by incompetent lips and high arched palate. Her oral hygiene was very poor and there was severe halitosis. There was generalized periodontal tissue loss with probing pocket depth ranging from 5 to 10 mm. The greatest probing pocket depth (≥ 10 mm) was seen between teeth 21 and 22. On exploration of periodontal pocket with a periodontal probe around teeth #21 and 22,

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Figure 1. Larvae coming out of the periodontal pocket between teeth #21 and 22.



Figure 2. Palatal incision given for open flap debridement to look out for remaining maggots.

a maggot was seen coming out of the mouth of the periodontal pocket (Figure 1) Thus a provisional diagnosis of periodontal myiasis was made.

The patient was transported to operating room and under intravenous conscious sedation and local anesthesia, cottons buds impregnated with turpentine oil was placed between teeth 21 and 22 for 10 min. Two more maggots appeared from there. Then, open flap

debridement, to look out for any missing maggots was planned. Buccal and palatal flap were elevated by giving crevicular incision using No. 15 blade followed by mucoperiosteal or fullthickness flap elevation using periosteal elevator (Figure 2). We found three more maggot plugged underneath the palatal flap. Then we thoroughly debrided the area with surgical curette and concomitantly irrigated the area with normal saline and



Figure 3. Open flap debridement did along with extraction of teeth #22.

5% povidine iodine solution and intensely searched for any remaining maggots. After ensuring that no more maggots were left, tooth number 22 was extracted as it was mobile (Figure 3) due to extensive damage caused by maggots. Then we replaced both flaps to their respective positions and sutured with 3-0 black silk and gave zinc oxide dressing.

The patient was prescribed Tablet Ivermectin drug for 2 days. Broad spectrum antibiotics amoxicillin 500 mg and metronidazole 400 mg TDS for 5 days were prescribed with analgesic Acetoaminophen 325 mg TDS for three days along with multivitamins and nutrition supplement. The patient was given tetanus prophylaxis and was instructed to practice oral hygiene measures using soft toothbrush along with Chlorhexidine mouthwash 0.2% (10 ml twice daily) for maintaining plaque control. The patient was recalled after a week for suture removal and re-evaluation. The healing was uneventful without any sign of any discomfort or swelling. There was no residual maggot infestation left and patient responded very well to the treatment.

The maggots isolated from the site were sent for entomological evaluation. The larvae were identified as *Chrysomya bezziana* by the entomologist. The maggots were 12 to 15 mm long, creamy white in color with transverse grooves and without body process. They also had open peritreme of the posterior spiracle and four to five lobes in the anterior spiracle suggesting larvae of *C. bezziana*.

DISCUSSION

Myiasis is caused by members of the Diptera fly family

that lay eggs on food, necrotic tissue, open wounds, and unbroken skin or mucosa. It can be obligatory, when larval flies develop in living tissue, or facultative, when maggots feed on decomposing matter or necrotic tissues.

C. bezziana also known as 'Old World Screwworm' is one of the causative organisms for obligatory myiasis. The species is widely distributed throughout South-East Asia, the Indian Subcontinent, China, tropical Africa, and Papua New Guinea. The species was first found in Hong Kong in July 2000, when animal cases were identified (Ng et al., 2003). The patient in the present case was of low socio-economic status having poor living conditions. Persistent mouth opening due to incompetent lips and high arched palate, protruded maxillary incisor with poor oral hygiene and advanced periodontal disease as seen in our case are the most commonly known predisposing factors for oral myiasis. The periodontal pocket act as an ideal habitat with very good nutrition supply, favourable environment and mechanical support for the larvae to grow. The mechanism of myiasis invasion involves the fly depositing their eggs in the periodontal pocket which penetrate deeper for larval development. The larva gets implanted and causes progressive destruction of periodontal supporting structure leading to cavitation and ultimately tooth loss (Shah et al., 1984). Feeble, old, paediatric or mentally handicapped patients who are unable to defend themselves, and who often present with a lack of labial closure as in this case, are attacked by flies and consequently by the disease (Gealh et al., 2009).

As the patient was in severe pain, hence there was an urgency to remove all the maggots from the periodontal pocket; the maggots which were visible were removed with a tweezer. Cotton impregnated with turpentine oil

were placed in the periodontal pocket to asphyxiate the remaining maggots, as turpentine oil acts an irritant by blocking larvae's air sinuses and compels them to come out (Babu et al., 2010) .

The current treatment protocol for myiasis includes maintenance of nutrition, antimicrobials for secondary infection and manual removal of larvae with or without topical asphyxiating drugs such as ether, chloroform, olive oil, turpentine oil that expels the larvae to come out. Ivermectin given orally in just one dose of 150 to 200 mg/kg body weight and repeated after 24 h has been reported to be effective in severe cases (Shinohara et al., 2004). It is activated by gamma amino butyric acid liberation, which leads to parasitic death and their spontaneous elimination by washing out larvae (Victoria et al., 1999). Failure of antihelminthic therapy has been reported by Gealh et al. (2009) with survival of larvae even after 5 days of therapy, warrants for surgical debridement.

The developmental cycle of *C. bezziana* from egg to adult fly is completed in 18 days under favourable conditions. The adult female fly lays eggs on live mammals and deposits eggs every two days at the site of the wound in body orifices. The eggs hatch after 12 to 18 h and the first-stage larvae, white in color and 15 mm in length emerges from the eggs and then burrow into wound or wet tissues. They feed not only on the host's dead tissues but also on the living tissues, and the wounds increase in sizes as they feed. In about four days, the larvae metamorphose into the second and third stages. After 5 to 7 days, the third-stage larvae leave the wound and fall to the ground to pupate and transform into adult fly in 7 days (Kwong et al., 2007).

Since the flies are the transmitters of the disease and are attracted to open putrefying wounds, poor oral hygiene, lack of manual dexterity, incompetent lips, open bite and rural locality are considered to be predisposing factors for larval infestation in this patient. The flies are attracted to the bad mouth odor due to neglected oral hygiene or fermenting food debris usually affecting the both upper and lower arches by direct infestation. In addition, the patient had incompetent lips with a class II overjet, which could be thought of as a contributing factor to his neglected oral hygiene. Therefore maintenance of oral hygiene is paramount importance for prevention of this disease.

Conclusion

The incidence of myiasis can be reduced by raising the standard of living and improving personal hygiene habits as they rarely occur in these patients. Controlling fly vector population and maintaining good oral and personal

hygiene contributes in checking this infestation. Special needs patients (mental and/or physical disability) have difficulties in maintaining good oral hygiene due to poor manual dexterity. Therefore a special needs patient should be exposed to the dental education, motivation, prevention and intervention as early as possible to promote co-operation and confidence and to prevent disease.

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