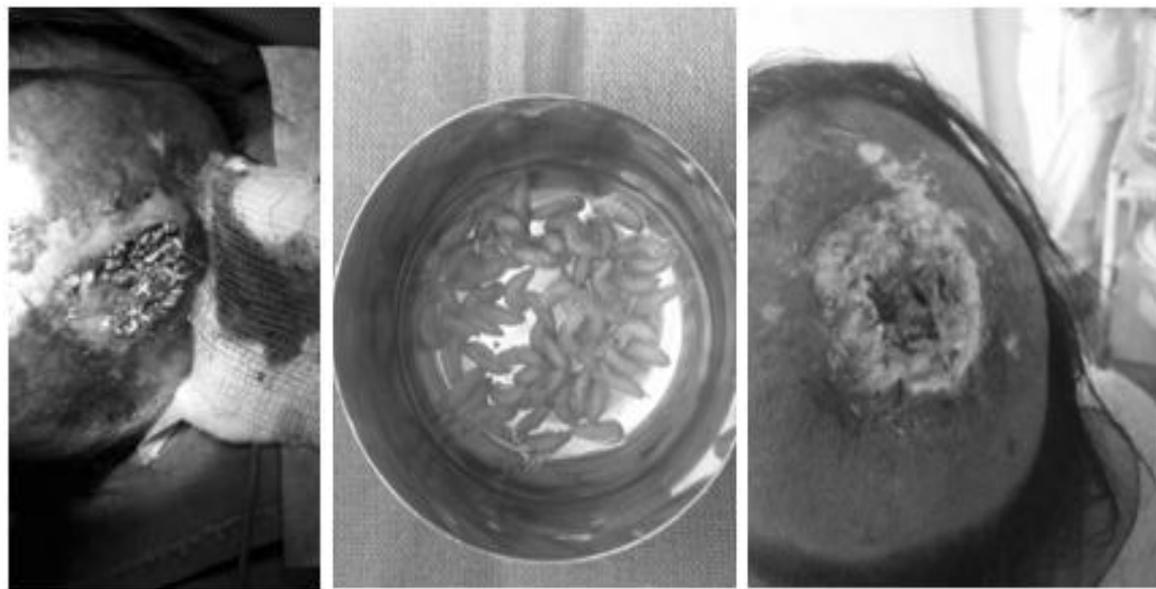


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## CASE REPORT

# A RARE CASE OF SCALP MYIASIS ASSOCIATED WITH OSTEOMYELITIS OF THE SKULL BONE

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### ABSTRACT

Scalp myiasis is a rare condition caused by invasion of the skin by larvae of fly. A case of a 54 years old lady with infected scalp wound is presented. Debridement of the wound lead to a surprise discovery and the challenges faced in the further management of the case is discussed.

#### Key words:

Myiasis, rotation flap, maggots  
debridement therapy.  
"have been added.

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## INTRODUCTION

Myiasis is a term derived from the greek word 'myia' which means fly.<sup>1</sup> The fly deposit their eggs, which hatch into larvae, these in turn infiltrate the tissue and destroy it.<sup>2</sup> It is most commonly seen in the tropics. The female fly deposits eggs on a blood-feeding insect when it bites the human. The larvae sense a different temperature and exit from the eggs and penetrate the skin. The larva feeds for 6-12 weeks in the host until it matures into an adult.<sup>3</sup>

Myiasis is seen to frequently affect individuals with socioeconomic levels, with poor hygiene habits, with psychiatric disorders and immunocompromised patients.<sup>4</sup>

Literature cites many successful instances where the use of sterilized maggots to chronic, infectious wounds has resulted in good results. They act by eating away the dead necrotic tissue, leaving behind healthy, granulating tissue which heals faster.<sup>5</sup> This leaves us with the dilemma of whether presence of maggots could actually be beneficial to the patient in the initial stages especially in areas like scalp where wound debridement by surgical ways could be dangerous. Here is a rare case of extensive scalp myiasis in a 54-year-old woman who was

referred to us for further management. The diagnosis and subsequent treatment is described in detail.

### Case Report

A 54 years old lady presented to us with the history of wound in the scalp for the last 3 months. There was no preceding injury or evidence of infection in the scalp. However, there was a history of burns in that area around 20 years ago after which the wound healed well. She was a teacher by profession and had to take off from work as she was experiencing pain at the site of wound since the last one week.

On exposing the scalp, we found an unhealthy looking wound on the right parietal region of the scalp. It was around 5x 4cm in size and was covered by slough and small maggots (*figure 1*). The subsequent afternoon, we explored the wound under general anaesthesia. The maggots were mechanically extracted with surgical forceps and the slough was debrided. They measured about 9-10mm in length and 3-4 mm in diameter, and had a yellowish-white body with black coloured heads (*figure 2*). The ones which were infiltrating deeper structures were left behind. The base of the wound was now exposed and to our surprise was found to be pulsatile with exposed duramater.

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There was a bony defect in the scalp measuring around 6x5 cm and maggots were found crawling on the duramater. Neurosurgeon's opinion was sought and a thorough wash with hydrogen peroxide was given and a dressing was applied.

After three weeks of the first procedure, the wound was now healthy for a cover. A rotational occipito-frontal flap was done to cover the defect. The wound was adequately covered and the flap took up well. The patient was discharged after a week and was followed up for the next two months (figures 4 and 5). Scalp remained healthy and she was satisfied with the outcome of the treatment.



Figure 1 Scalp wound covered with maggots



Figure 2 Maggots collected during wound debridement.



Figure 3 Healing wound with dead maggots.



Figure 4 Post op day 10 with well taken up flap.

A Computed tomograph was done the next day and it showed loss of bone in right parietal skull with a breach in the duramater. There was evidence of pneumocephalus. A neurosurgery opinion was sought to certify the disease free state of the brain matter. Since the wound was still unhealthy, dressing was done twice a day with normal saline and hydrogen peroxide. The wound healed well and dead maggots were found lying on the wound for the first two days (figure 3). Superficial wound debridements were done twice under short general anaesthesia until the wound was healthy to be covered. Care was taken to prevent infection to the exposed duramater and the underlying brain tissue. Adequate sterility was maintained during the dressings and a good antibiotic coverage was given.



Figure 5 Well healed wound at 6 weeks post op.

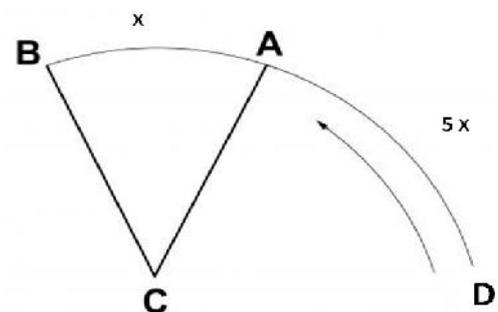


Figure 6 Classic rotation flap where AB (x) is the defect and AD (5x) is the flap, rotated over to cover it

## DISCUSSION

Myiasis is a parasitic infestation by the larvae of dipterous flies. It is common in regions with warm and humid climate. The infestation usually strikes the tissues that are accessible to lay

eggs and where the skin is not protected by clothing.<sup>6</sup> Pre-existing wounds, osteomyelitis of the underlying bone, cutaneous malignancies predispose to maggots infestation. The eggs are deposited by the blood-feeding insect and the first stage larvae emerge from the eggs and moves towards the wound. They feed on the tissue fluids, change into stage 2 and stage 3 larvae after 30 hours and 4 days respectively. These penetrate the living tissues of the host and obtain nourishment from it. Stage 3 larvae after feeding, change into pupae and then fly.<sup>7</sup> This can cause localized pain and itching and sometimes, the patients reports with sensation of movement under the skin.

In our case, the patient had a thermal burns wound in scalp a decade ago. The nature of healing of this wound is unknown as no records were available. On imaging and on examination under anaesthesia, the underlying skull bone was found to have osteomyelitic changes. What remains unclear is whether the bony defect was a result of incomplete wound healing after the burns, making the area insensitive to maggots infestation till they infiltrated the surrounding skin or whether the bony defect was a result of maggots infestation. Although maggots will always look for necrotic tissue and slough as a food source, they could cause some damage to living tissue if they have no other choice.<sup>8</sup>

Mechanical extraction of the larvae remains the most widely accepted treatment of this infestation preceded by infiltration of the surrounding skin with a local anaesthetist which helps in pushing out the maggots. Various other methods have been used to cause death or partial asphyxiation of the larva prior to its extraction. Hypodermic injection of either ether or chloroform kills the parasite but results in sloughing of tissue and severe pain. Closure of the breathing hole has been attempted too but it results in pain because of parasite's increased activity to seek air.<sup>2</sup>

The literature also mentions the beneficial effect of fly larvae on human wounds; first described by military physicians in the 19<sup>th</sup> century. With the advent of antimicrobials, maggot debridement therapy (MDT) had become rare, until its re-introduction in early 90s. MDT involves the use of sterile maggots that can deslough any purulent, infected wounds on the skin at any location of the body, making a surgical debridement easier.<sup>9</sup>

Closure of such an extensive wound is a challenge and we did that with the help of a rotation flap. Tissue can move into an adjacent defect in two directions. It can advance in a straight line (i.e advancement flap), or the tissue can rotate into the defect (i.e, rotation flap). A rotation flap is a semicircular skin flap that is rotated into the defect on a fulcrum point.<sup>10</sup> In figure 6, point A moves to point B with rotational motion. The closure of point C has a component of advancement motion. The length of the circular cut, AD is usually 5 times the size of the defect to be covered. This is because in general, the human skin can be stretched upto 5 times.

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This flap provides the ability to mobilize large areas of tissue with a wide vascular base for reconstruction. The flap must be adequately large, and a large base is necessary if a back-cut will be needed to lengthen the flap. If the length is too small, the residual defect can be covered by mobilizing the surrounding tissue.<sup>11</sup> A drawback of rotation flap is the extended cutting and undermining needed to create the flap, thus increasing the risk of haemorrhage and nerve damage.<sup>12</sup> Two areas that require revision are created: (1) a standing cutaneous deformity (dog ear), that is, the lower portion of the circular defect at point C (*figure 6*), and (2) an inequity in length, along the circular incision of the flap itself. Appropriate and timely management led to a favourable outcome in a case which could very well have deteriorated had there been any brain tissue damage. This case gains significance owing to its rarity and reaffirms the need to be updated about treatment modalities of such exceptional scenarios.

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