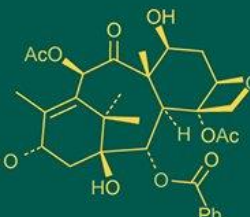
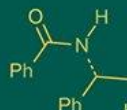
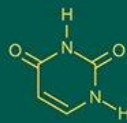
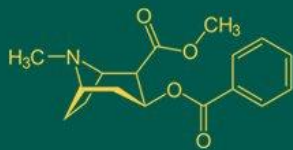


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Extirpation of eyeball due to myiasis induced wound in a jersey cross bred heifer calf

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Abstract

Myiasis wound is a parasitic infestation of the tissues of a living vertebrate animal by the larvae of flies, which grow inside the host while feeding on its dead or living tissue, causing varying degrees of traumatic injury. This condition is particularly common during the rainy and winter seasons. In the present study, an 8-month-old Jersey crossbred heifer calf was presented with a history of bloody discharge and swelling of the right eyelid for the past 7 days. Upon examination, it was found that the calf's right eye was infested with maggots, and the eye structures had been completely consumed by the larvae. Based on the clinical findings, it was decided to perform complete extirpation of the affected eyeball. This was done using nerve block techniques and available surgical instruments under field conditions. The calf recovered well post-surgery, and appropriate follow-up care was provided.

Keywords: Myiasis, eyeball, cattle, extirpation, surgery

Introduction

Myiasis (or maggot wound) refers to the parasitic infestation of the tissues of a living vertebrate animal by larvae of the order *Diptera* (true flies). These larvae grow inside the host while feeding on its dead or living tissue, causing varying degrees of traumatic injury, depending on the relationship between the larvae and the host, as well as the location of the infestation (Hall and Farkas, 2000; Francesconi and Lupi, 2005; Robbins and Khachemoune, 2010) [1, 2, 3]. Myiasis is particularly common during the rainy and winter seasons among both large and small animals. Clinically, myiasis can affect any part of the body, and its subsequent development in the host may include gastrointestinal, urogenital, ocular, nasopharyngeal, auricular, and cutaneous myiasis (Abdullah *et al.*, 2015) [4].

The therapeutic management of maggot wounds includes manual removal of both dead and live maggots or the application of wound cleaning agents, such as turpentine oil, followed by general wound care and removal of necrotic tissue (Rafee *et al.*, 2016) [5]. Subsequent wound treatments involve irrigation, dressing, and the administration of ivermectin, antibiotics, and anti-inflammatory or antihistamine drugs (Nayak *et al.*, 2010) [7]. Myiasis of the eye can lead to severe tissue damage and, in extreme cases, the loss of the eyeball. This case presents the surgical management of an 8-month-old Jersey crossbred heifer calf with myiasis-induced damage to the right eyeball, ultimately leading to enucleation (extirpation) of the eye.

Clinical history and Examination

An 8-month-old Jersey crossbred heifer calf was presented to the veterinary dispensary at Appampattu, Gingee block, Villupuram district, Tamil Nadu, with a history of bloody discharge, foul-smelling exudate, and swelling of the right eyelid for 7 days (Figure 1). The owner had attempted to treat the calf using commercially available sprays without properly cleaning the wound.

On clinical examination, a facial nerve reflex was observed, but no motor or sensory nerve responses were detected in the right eye. Further examination revealed that the calf's right eye was infested with maggots, which were responsible for the bloody and serosanguinous discharge. No new growth was found. Upon closer inspection, the eye structures were completely destroyed by the maggots, making it impossible to differentiate the components of the fibrous tunic (sclera and cornea), the vascular tunic (choroid, ciliary body, and iris), or the retinal and lens structures. Maggots were also found in the orbicularis oculi (responsible

for eyelid movement) and in muscles responsible for eye movement, including the levator palpebrae superioris, rectus dorsalis, rectus ventralis, rectus medialis, rectus lateralis, and the two oblique muscles (oblique dorsalis superior and oblique ventralis), as well as the retractor oculi muscle.

Based on the clinical findings, and with the owner's consent, a decision was made to perform a conservative surgical procedure involving the complete extirpation of the affected eyeball. This was carried out using the available surgical materials and instruments in field conditions.

Diagnosis

The diagnosis of ocular myiasis was confirmed based on the presence of maggots and extensive tissue damage to the right eyeball. The larvae of *Lucilia* species were identified as the likely cause of the infestation. Myiasis was likely facilitated by environmental factors such as damp conditions, which provide an ideal breeding ground for the fly larvae.

Treatment plan

Pre-Surgical Procedure

The animal was positioned in lateral recumbency with the affected side up. The calf was sedated with Xylazine at a dose of 0.05 mg/kg. The skin around the eye was surgically prepared using 5% Betadine, and an auriculopalpebral and retrobulbar nerve block were performed with 2% Lignocaine hydrochloride (Vijay *et al.*, 2021) [8] (Figures 2 & 3).

Surgical Procedure

- The upper and lower eyelids were sutured together with a continuous suture using cotton thread as the suture material. Two ends of the cotton thread were left 15-20 cm long on either side for grasping and applying traction during the surgical procedure.
- An incision completely encircling both eyelids was made approximately 0.5 cm from the palpebral borders and extended around the entire circumference of the lid margins, between the orbital rim and the eyeball.
- The muscles of the eye were separated by blunt dissection and then excised with scissors. However, we were unable to hold the complete structure while applying traction, as the tissues were necrotic due to the maggots. The encountered haemorrhage was controlled using artery forceps.
- After the removal of all damaged tissues, the optic nerve along with the optic vessels was palpated and grasped with curved artery forceps.
- Trans fixation was then performed using the available absorbable suture material (catgut), applied below the artery forceps, to control the haemorrhage. Once the haemorrhage was completely controlled in the cavity with the help of a gauze piece soaked in Tincture Benzoin (Figure 4), all blood clots were removed, and the cavity was packed with a povidone-iodine-soaked gauze piece, leaving one end of the gauze outside the eye incision at the dependent part of the eye (medial canthus).
- The edges of the eyelids were sutured using simple interrupted sutures with non-absorbable suture material (silk thread), leaving an opening on the dependent side from which the gauze piece protruded (Figure 5).

- The surgical procedure followed in this case was based on the studies of Vijay *et al.* (2021) [8], Schulz *et al.* (2010) [9], and Magda *et al.* (2015) [10]. Following complete suturing, the area was dressed with antibiotic ointment, and a bandage was applied.

Post-Operative Care

After surgery, a pressure bandage was applied for 24 hours (Figure 6), and follow-up dressing was performed on alternate days. On the same day as the surgery, an injection of Ivermectin at a dose of 0.3 mg/kg body weight was administered once via the subcutaneous route (Preveen Kumar *et al.*, 2018) [6].

Supportive therapy included the administration of Inj. Meloxicam at a dose of 0.5 mg/kg body weight intramuscularly once a day for 3 days as an anti-inflammatory, antipyretic, and analgesic drug. Additionally, a course of parenteral antibiotics (Amoxicillin at 10 mg/kg body weight) was given orally for 5 days post-operatively to treat secondary bacterial infections.

Sutures were removed on the 10th day post-surgery, and the wound healed completely by the 15th day. The calf was normal and active at this point (Figure 7).



Fig 1: Bloody discharge, foul-smelling exudate, and swelling of the right eyelid for 7 days



Fig 2, 3: The skin around the eye was surgically prepared using 5% Betadine, and an auriculopalpebral and retrobulbar nerve block were performed with 2% Lignocaine hydrochloride



Fig 4: Tincture Benzoin



Fig 5: Gauze piece protruded



Fig 6: A pressure bandage was applied for 24 hours



Fig 7: The calf was normal and active at this point

Results and Outcome

The calf responded well to the surgery, with no immediate post-operative complications. Over the next week, swelling around the surgical site reduced, and the calf became more comfortable. The wound healed without signs of infection, and the calf resumed normal activity within two weeks. A follow-up examination showed no signs of systemic illness, and the remaining eye appeared healthy. The owner was advised on proper wound care, hygiene, and preventative measures to avoid future infestations.

Conclusion

This case demonstrates the importance of recognizing and treating ocular myiasis in livestock early to prevent irreversible damage. The successful outcome of the calf following extirpation emphasizes the importance of surgical intervention and comprehensive wound care in managing severe myiasis cases. Farmers should be educated about the risks of myiasis, especially in damp conditions, and be

encouraged to implement preventive measures such as fly control programs and proper hygiene to reduce the likelihood of such infestations in the future.

References

- Hall MJ, Farkas R. Traumatic myiasis of humans and animals. In: Contributions to a Manual of Palaearctic Diptera. Science Herald; c2000. p. 751-768.
- Francesconi F, Lupi O. Myiasis. Clin Microbiol Rev. 2005;25(1):79-105.
- Robbins K, Khachemoune A. Cutaneous myiasis: a review of the common types of myiasis. Int J Dermatol. 2010;49(10):1092-1098.
- Abdullah FFJ, Chung ELT, Marza AD, Mohammed K, Abba Y, Tijjani A, *et al.* Clinical management of cutaneous myiasis wound due to post traumatic horn injury in a bull: A case report. J Agri Vet Sci. 2015;8(11):73-75.
- Rafee MA, Amarpal Kinjavdekar P, Aithal HP. A protocol for the successful management of maggot wound in dogs. Indian J Canine Pract. 2016;6:141-143.
- Kumar P, Yadav A, Lokesh, Mehra US, Yadav R, Kumar P. Therapeutic management of myiasis wound due to traumatic injury in gingival of a Murrah buffalo calf. Int J Curr Microbiol Appl Sci. 2018;7(11):2979-2983.
- Nayak BS, Julien RM, Godwin I. Wound healing potential of ethanolic extract of *Kalanchoe pinnata* Lam. leaf: A preliminary study. Indian J Exp Biol. 2010;48:572-576.
- Vijay A, Ponnu Swamy KK, Rajkumar R, Hamsa Yamini, Nassema. The Pharma Innovation Journal. 2021;SP10(4):9-10.
- Schulz KL, Anderson DE. Bovine enucleation: a retrospective study of 53 cases. Can Vet J. 2010;51(6):611-614.
- Magda MA, Madeh AS, Ahmed I. Ocular field surgery in ruminants. Int J Vet Med Res Rep. 2015;12:1-8.