Extirpation of Eye in Chronic Case of Traumatic Eye in Cattle - A Case Study

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Received: 29/03/2020
Accepted: 20/04/2020

Abstract
A 6 year old Holstein Friesian, pregnant cow was presented with the history of serious eye injury in its right eyeball due to the penetration of a sharp rusted nail. Clinically the animal was having a serious damaged eye as evident by avulsions in the eye ball with excessive lacrimation, enophthalmos and intense purulent discharge (pus) from the base of eyeball. Extirpation of the eye ball with tarsorrhapy was undertaken under four point retro bulbar nerve block. The cow showed an eventful recovery with no complications.

Keywords: Ocular, Irreparable injury, Extirpation, Tarsorrhapy.

1. Introduction
Ocular disease and injuries remain a common occurrence in ruminants. In many instances, medical management is sufficient for the resolution and amelioration of clinical signs of these conditions. However, in few selected cases, surgical intervention may be required (Irby, 2004; Khan et al., 2014). Although animals with many ophthalmic diseases may continue to eat and produce milk reasonably well, but they usually tend to lose weight (Rubin, 1984; Rahman et al., 2012). Removal of eye is indicated in animals in such cases when it has reached a point where it has no chance of being capable of return to the normalcy and it is very painful to the patient (Mitchell, 2008). Trauma to the eye such as an infected scratch injury or puncture to the eye by fighting with other animal or hitting of the eye with sharp objects like nails, wires etc., tumors of the eye, glaucoma (increased pressure inside the eye) are considered to be most common causes for creation of a painful, blinded eye (Gilger et al., 1995). Present case discusses about one such irreparable and painful injury of right eye caused by penetration of sharp rusted nail.

2. Case History and Clinical Findings
A 6 year old Holstein Friesian, pregnant cow was presented with the history of serious eye injury in its right eyeball along with discharge of serosanguineous fluid from the affected eye. Anamnesis revealed that the cow suffered a traumatic injury to eyeball with the penetration of a sharp rusted nail leading to the serious injury in the right eyeball. However, the local Para-Vet treated it with parenteral antibiotics and anti-inflammatory drugs. Meanwhile in due course of time (21 days) eyeball became desiccated and infected leading to necrotic changes. Close examination of the patient revealed a serious damaged eye globe as evident by avulsions in the eye ball with excessive lacrimation, enophthalmos and intense purulent discharge from the base of eyeball (Fig 1). The clinical examination of the patient revealed normal rectal temperature, tachycardia with normal respiratory rate. The hematological profile revealed normal hemoglobin value with mild leukocytosis, giving indication of low level of infection. The animal has turned restless and is reactant towards feeding. Hence, it was planned for removal of the infected eyeball under regional anesthesia.

3. Diagnosis and Treatment
Present case was diagnosed as irreparable injury of right eye with severe purulent discharges and enophthalmos of the right eyeball. Extirpation of the eye with tarsorrhapy provided the best mean of treatment with no post-surgical complications and successful recovery of the pregnant cow.

3.1 Pre-Operative Management
Preoperative injection of ceftriaxone and tazobactum combination (10 mg/ kg IV) was given half an hour before surgery to reduce the incidence of postoperative infection. Flunixin meglumine (2.2 mg/kg slow IV) was immediately used before extirpation of eye. Sedation of the pregnant animal was done with triflupromazine (0.22 mg/kg IM).
3.2 Surgical Site Preparation
The hair around the eye was shaved off and the skin was disinfected with betadine, the halter was removed to avoid contamination to the surgical site. Saline solution rinse was used rather than antiseptic scrubs to prevent irritation to the damaged eyeball.

3.3 Anesthesia
The four-point retrobulbar block was performed by injecting 10 ml of local anesthetic through the eyelids, both dorsally and ventrally (at the 6 and 12 o’clock positions) and at the lateral and medial canthi. A total of about 40 ml (10 ml each site) of local anesthetic (lignocaine hydrochloride 2%) was injected at the apex of the orbit where the nerves emerge from the foramen orbitoretundum (Fig 2).

![Fig 2: Needle placement for the 4-point block.](image)

An 18G 3 inch needle which has been curved to form an arch with a radius of approximately 10 inches was used. The needle was first directed straight back and away from the eyeball, until the point is beyond the globe and then turned inward to penetrate the muscle cone. The local anesthetic was injected when no blood was yielded by aspiration on the needle. After achieving a successful block the eyelids are sutured closed in a continuous pattern, with the ends of the suture left long for traction.

3.4 Surgical Technique
A transpalpebral incision, starting ventrally, was made around the orbit, leaving as much normal tissue as possible. The incision was given around 1 cm from the margin of the eyelid. Sharp or blunt dissection was done around the orbit down to the caudal aspect avoiding entrance through the palpebral conjunctiva. The optic stalk and blood supply were reached, transfixed with Catgut No. 2-0 and severed distally thereafter. Following extirpation, a large dead space was left which was packed with sterile gauze impregnated with Povidine Iodine, leaving the small end towards the canthus for removal after 48 hrs (Fig 3). The skin incision was closed with synthetic nonabsorbable suture material in interrupted pattern.

![Fig 3: Placement of sterile gauze in dead space.](image)

3.5 Post-Operative Care
Animal was kept in a confined area for several days after surgery to allow appropriate hemostasis and healing to occur. Post operatively animal was given injection of ceftriaxone and tazobactum combination @10 mg/ kg IM and injection of Meloxicam @0.2 mg/ kg IM for three days. Daily observation of the surgical site, antiseptic dressing and assessment of general wellbeing was performed until suture removal. The animal showed an eventful recovery (Fig 4), with no complications. Sutures were removed after 21 days.

![Fig 4: Post-Operative Photograph of healed site on day 21.](image)

4. Result and Discussion
Irreparable injuries of eye or severe orbital and eye ball injuries, neoplastic growth in ruminants need enucleation or extirpation of the eye depending upon the nature of ailment and surgeon’s choice (Tyagi and Singh, 2010; Khan et al., 2014).

Acquired traumatic injuries of eye occur at higher incidence than the congenital diseases (Das et al., 2008; Ahmed and Hassanein, 2012; Venugopalan, 2000). Present case was diagnosed as irreparable injury of right eye with severe purulent discharges and partial enophthalmos. Extirpation of the eye with tarsorrhapy provided the best mean of treatment with no postsurgical complications and successful recovery of the pregnant cow.

5. Conclusion
Most of the eye injuries are caused by foreign objects like thorns, bushes, stings and other pointed object like nails, wires etc. A similar kind of irreparable injury of right eye caused by a sharp rusted nail is thus reported, with severe purulent discharges and partial enophthalmos, which was corrected by the extirpation of the eye with tarsorrhapy. It provided the best mean of treatment with no postsurgical complications and successful recovery of the pregnant cow.
References


