

Successful Surgical Repair of Upper Eyelid Lacerations: A Case Series in Five Buffaloes

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ABSTRACT

The present study compiles five clinical cases of buffaloes presented with upper eyelid lacerations (laterally located) resulting from trauma. The aim was to assess their clinical presentation, surgical repair, and healing outcomes. The duration between trauma and presentation ranged from 1 to 25 days, with the causes mostly attributed to trauma from other buffalo, iron rod or unknown sources. In one buffalo, the laceration was accompanied with prolapse of the lacrimal gland. The lacerations were surgically repaired under sedation and auriculo-palpebral nerve block. Muscles and subcutaneous tissue were sutured in all cases (as per the availability), using absorbable polyglactin 910 and the skin with non-absorbable nylon. The prolapsed lacrimal gland was successfully repositioned prior to closure. The postoperative care included systemic antibiotics, anti-inflammatory medications and topical antibiotic eye ointments. Out of 5 buffaloes, 4 could be followed and all buffaloes had uneventful healing. The study highlights the occurrence of upper lateral eyelid lacerations with or without lacrimal gland prolapse in buffaloes and effectiveness of surgical intervention in restoring eyelid integrity and ocular function, even if presented late.

Key words: Buffalo, Eyelid, Laceration, Lacrimal gland prolapse, Surgery.

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INTRODUCTION

Farm animals are prone to various eye affections (Mahajan *et al.*, 2017). Individual case reports of eyelid lacerations are reported in buffaloes with a report of lacrimal gland prolapse as well (Kumar *et al.*, 2016). Upper eyelid lacerations can occur due to trauma by another animal, while grazing, with barbed wire fences and thorns in bovine and camels (Bishnoi and Gahlot, 2004; Hendrix, 2013). Eyelid lacerations, if not properly managed, can lead to complications such as exposure keratitis, infection, and impaired vision. In many cases, the upper eyelid is traumatized, exposing the underlying muscles; in extreme cases, the eyelid is separated from the lateral canthus of the eye and hangs as a pedicle (Irby, 2004). There are several techniques of treating upper eyelid lacerations, including two-layered and three-layered restoration. The procedure is chosen depending on the severity of the laceration and the tissue involved. The present study describes the clinical presentation, surgical repair and outcome of upper lateral eyelid lacerations in five buffaloes.

MATERIALS AND METHODS

The study includes 5 cases of buffaloes presented with upper eyelid laceration (laterally located) that were surgically repaired successfully. The detailed signalment and clinical presentation of all the buffaloes was recorded.

Sedation was provided to excited buffaloes; otherwise, the surgery was done under auriculo-palpebral nerve block and local infiltration anaesthesia and in recumbent position. In non-pregnant animals, sedation was provided

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using xylazine hydrochloride at a dose of 0.08 mg/kg intramuscularly.

The lacerations were sutured used polyglactin 910 (2-0) in one or two layers as per the tissue availability. Simple continuous suture pattern was used for the approximation of internal structures. The skin was closed using non-absorbable nylon in an interrupted suture pattern. All the buffaloes were followed for outcome telephonically or through social media.

RESULTS AND DISCUSSION

The details of all the five buffaloes are depicted in Table 1. Out of 5, 3 were of Murrah cross breed and 2 were Jafarabadi. Most of the buffaloes were middle age adult, while one was young of 3 years. The buffaloes were either early pregnant or

Table 1: Table showing the signalment, clinical presentation, surgical findings and outcome of 5 female buffaloes suffering from upper eyelid lacerations

Details	Case 1	Case 2	Case 3	Case 4	Case 5
Age (years)	7	10	3	9	10
Breed	Murrah cross	Jafarabadi	Jafarabadi	Murrah cross	Murrah Cross
Body weight	550 kg	590 kg	380 kg	540 kg	600 kg
Pregnancy status	One month	Non-pregnant	Non-pregnant	Non-pregnant	3 months
Days of laceration	1	1	6	1	20
Aetiology	Trauma by another buffalo	Trauma with iron rod	Unknown trauma	Trauma during bathing in pond	Trauma by another buffalo
Clinical presentation	Infected upper eyelid laceration with lot of dead tissue hanging (Fig. 1a).	Infected upper eyelid laceration with lacrimal gland prolapsed (Fig. 1b).	Upper eyelid laceration with contracted wound (Fig. 1c).	Infected upper eyelid laceration (Fig. 1d).	Contracted wound of upper eyelid laceration (Fig. 1e)
Side affected	Right	Right	Left	Left	Left
Anaesthesia	Auriculo-palpebral nerve block and some local infiltration	Auriculo-palpebral nerve block and some local infiltration. Sedation done with xylazine (0.08 mg/kg, IM)	Auriculo-palpebral nerve block and some local infiltration	Auriculo-palpebral nerve block and some local infiltration. Sedation was done with xylazine	Auriculo-palpebral nerve block and some local infiltration
Surgical findings	Subcutaneous sutures were applied after freshening the wound with 2-0 polyglactin 910. Skin was closed with nylon sutures (Fig. 2a).	The wound was cleaned with normal saline. The lacrimal gland was reposed in normal place and subcutaneous sutures were applied with polyglactin 910 (2-0). Skin sutures with nylon (Fig. 2b)	Subcutaneous sutures were applied after freshening the wound with 2-0 polyglactin 910. Skin was closed with nylon sutures (Fig. 2c)	Subcutaneous sutures were applied after freshening the wound with 2-0 polyglactin 910. Skin was closed with nylon sutures (Fig. 2d).	Subcutaneous sutures were applied after freshening the wound with 2-0 polyglactin 910. Skin was closed with nylon sutures (Fig. 2e).
Outcome	Healed in 15 days. Sutures removed (Figure 3a).	Healed in 15 days. Slight contracture in eyelid seen (Fig. 3b).	Healed in 15 days.	No follow up	Healed in 15 days (Fig. 3c).



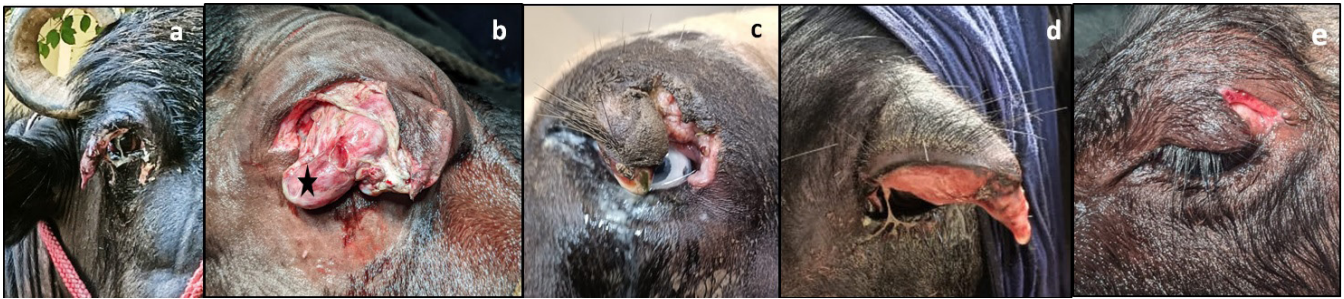


Fig. 1: Photographs of presentation of upper eyelid lacerations on lateral aspect in buffaloes. One day old laceration with loose tissue hanging (a), Lateral upper eyelid laceration with prolapse of lacrimal gland (black star) after cleaning the wound (b), a 6 day old upper eyelid laceration with contracture at laceration site (c), One day old upper eyelid laceration (d), 20 day old upper eyelid laceration after cleaning (e).

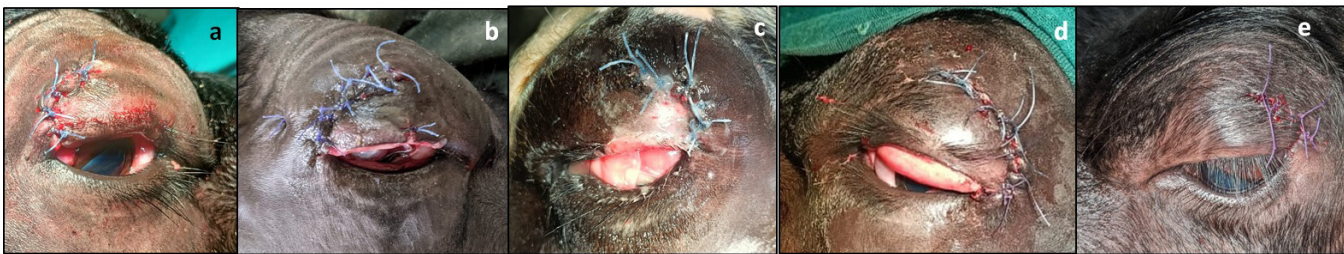


Fig. 2: Photographs of the buffaloes with upper eyelid laceration (lateral) after surgical repair.

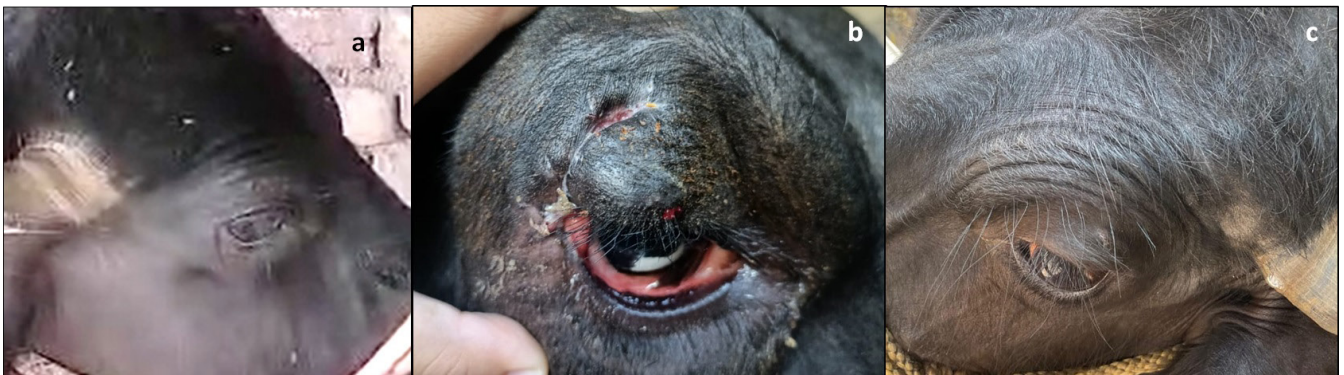


Fig. 3: Follow up photographs of case 1 (a), case 2 (b) and case 5 (c) after healing. The case 2 had lacrimal gland prolapse as well and shows some contracture at repair site.

non-pregnant. Three buffaloes were presented on the same or next day of trauma, while one at 6 days and one at 25 days.

Post-operatively, all the buffaloes were prescribed antibiotics Inj. Ampicillin-Cloxacillin @ 10 mg/kg, BID for 5 days, Inj. Gentamicin @ 4 mg/kg, in two divided doses for 3 days and painkiller as inj. Meloxicam @ 0.2 mg/kg, OD, for 3 days, intra-muscular. Neobactin eye ointment was advised for application on the suture line and in the eye. Suture removal was advised at 14 days post-operative. All the buffaloes were followed for outcome but one lost to follow up. The other 4 buffaloes showed complete healing in 15 days. The lacrimal gland prolapse buffalo has mild contracture of the eyelid, while the 25 days old laceration healed perfectly.

Laceration of the upper eyelid has been observed in a variety of domestic animals. The majority of the reports involve dromedary camels (Siddiqui and Telfah, 2010; Jena *et al.*, 2015). The cause can be varied, including trauma,

overcrowding, barbed wire fences, thorns, nails, and so forth (Balagopalan *et al.*, 2016). The two-layered suturing technique comprises suturing the palpebral layer first, followed by suturing the muscle and skin together (Kumar *et al.*, 2016). A three-layered suturing technique in which the deep layer involved fibrous tarsal and orbicularis oculi, the intermediate layer involves subcutaneous tissue, and the surface layer involved the skin has also been described (Irby, 2004). The primary obstacle in restoring function in the upper eyelid is infection, irritation of the cornea due to suturing material, and non-opposition of the sutured layers (Shammi *et al.*, 2019). Suturing plays a critical role in the successful repair of lacerated wounds on the upper eyelid. To ensure precise alignment of the wound edges and avoid distortion during the procedure, local infiltration with 2% lignocaine hydrochloride was administered just above the suture line. This local anaesthesia not only minimized discomfort but

also helped in achieving accurate tissue approximation for optimal healing (Kolangath *et al.*, 2023). The successful outcomes in these cases highlight several key considerations in the management of eyelid lacerations in buffaloes; prompt surgical intervention to prevent complications such as infection, necrosis, and impaired eyelid function, anatomical considerations of eyelid and lacrimal gland transposition and precise alignment of the eyelid margin is vital to restore function and prevent long-term complications.

In general, the eyelid lacerations in buffaloes, while potentially serious, can be effectively managed through prompt surgical intervention. The lacrimal gland prolapse may be associated with upper lateral eyelid laceration in buffaloes which need its proper placement for success and not resection.

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