

TRANSPALPEBRAL EXENTERATION OF EYE FOR RECURRENT SQUAMOUS CELL  
CARCINOMA IN A NILI-RAVI BUFFALO – A CASE REPORTUrfeya Mirza<sup>1\*</sup>, Sukhnandan Singh<sup>1</sup> and Uiaise Bin Farooq<sup>2</sup>

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**ABSTRACT**

In this article, the treatment of squamous cell carcinoma surgically in an eye of an 8-year-old Nili-Ravi buffalo with entire vision loss is described. The positive result of this case indicates that radical exenteration of the orbit is a feasible option for alleviating the distress of bovines with squamous cell carcinoma of the eyes.

**Keywords:** *Bubalus bubalis*, buffaloes, exenteration, carcinoma, eyes

**INTRODUCTION**

The squamous cell carcinoma of the bovine eye, often known as cancer eye, is the most prevalent malignant tumour affecting cattle. It develops from the stratified squamous epithelium (stratum spinosum cells) and causes a major financial loss for the livestock industry (Yavuz and Yumuşak, 2017; Pazhanivel and Umarani, 2022). It is a benign tumour that develops spontaneously in bovines all around the world. The most frequent places for ocular squamous cell carcinoma to occur

are the lateral conjunctiva and the corneo-limbal junction. Less typically afflicted areas include the nictitating membrane, medial canthus, and the lower eyelid. Squamous cell carcinoma of the conjunctiva is most frequently found in the lateral rather than the medial side along the axis of eyelid closure in bovines (Russell *et al.*, 1956). Ocular squamous cell carcinoma is a common tumour, but its cause is unknown. A number of theories have already been put out to explain its occurrence, such as breed predisposition, the effects of ultraviolet (UV) light exposure, viral infection, age and gender, inheritance, and dietary circumstances (Anderson and Skinner, 1961; Taylor and Hanks, 1969; Tsujita and Plummer, 2010; Jara *et al.*, 2022; Nithya *et al.*, 2022).

Squamous cell carcinoma of eyes is typically diagnosed based on the distinctive clinical presentation, while the diagnosis can be confirmed by cytologic analysis of impression smears or histopathologic analysis of biopsy specimens. Primary lesions have a band-like infiltration of mononuclear cells in the top dermis, or possibly a considerable degree of epithelial hyperplasia and dysplasia. Keratin pearls occur in more advanced lesions, and there is indication

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of lymphatic or vascular dissemination. Bovine ocular squamous cell carcinoma can be treated with surgery; chemotherapy, radiation therapy, immunotherapy, cryotherapy, radiofrequency hyperthermia, are among other methods. Numerous therapy regimens have been documented in several key locations, however they vary in difficulty, requirements, and outcomes (Kainer *et al.*, 1980; Schoster, 1992; Stewart *et al.*, 2006; Akbas *et al.*, 2021; Lakshmi *et al.*, 2021). The most effective treatment for squamous carcinoma of the ocular surface is the excision of the lesions. At the margins of the healthy tissue, the tumour and the tumor-affected area must both be removed (Scheck, 2005). A wider operative boundary of 2 to 3 millimeters surrounding the boundaries of the lesions is usually sufficient to remove the majority of lesions.

## HISTORY AND DIAGNOSIS

An 8-year-old, three months pregnant Nili-Ravi buffalo was presented possessing a history of loss of vision with a growth inside the eye (Figure 1). Vital signs and physiological parameters were all found to be normal during a clinical assessment. A 6.60x4.20 cm tumour mass that had begun in the left eye as a swelling 6 to 7 months earlier and advanced rapidly over the last three months, resulting in a pressured bulbus oculi, was noticed. The eye was also significantly inflamed and distended. In the damaged eye, there was total vision loss. For histopathology, a small biopsy sample from the growth was obtained and treated in formalin (10%). Histological analysis revealed irregular cords of neoplastic squamous epithelial cells encircled by the stroma of connective tissue. The development of keratin pearls in the core of

the cords and the existence of a couple of mitotic figures demonstrated a good differentiation of the tumour (Figure 2). As a result, the growth was identified as squamous cell carcinoma.

Considering the chronic nature of the wound and after the clinical and histopathological examination, exenteration of the orbit was decided.

## TREATMENT AND DISCUSSION

For sedation, the animal was given 0.1 mg/kg xylazine (xylazine; Indian Immunologicals) intramuscularly and then constrained with the affected side up in lateral recumbency. The hair surrounding the eyes was trimmed, and betadine was used to clean the area. Analgesia was achieved at the surgical site by performing Peterson and auriculopalpebral nerve blocks, as well as a circular local infiltration of 2% Lignocaine hydrochloride (Xylocaine; Astra Zeneca Pharma India Limited) at the incision site (Figure 3). The upper and lower eyelids were stay sutured (Figure 4), and encircling the eyelids, an incision was made about 0.5 centimeters from the margins of the lids, but it was somewhat extended on the lower eyelid to surround the afflicted part (Figure 5). To provide access to the caudal part of the orbit, the ligaments of the lateral and medial canthus were severed. The haemorrhage was managed, the globe was dissected bluntly, and the optic nerve was transected to the maximum extent possible (Figure 6). After severing the excess ocular muscle and ligating the optic stump, the eyeball was removed. On the inner side of the medial can thus, the orbital fat and muscles were curetted out. The wound was closed using number 1 silk thread in a horizontal mattress pattern, followed by an opening near the medial canthus for exudate drainage and daily insertion of antiseptic



Figure 1. Tumour growth on the eye.

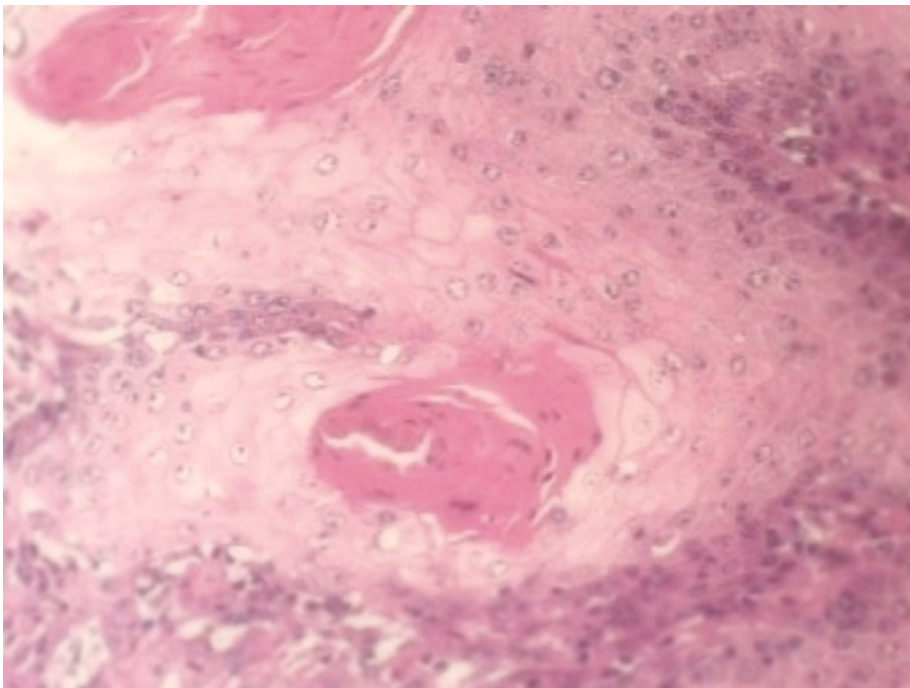


Figure 2. Extensive keratin pearl formation.



Figure 3. Administration of local anesthesia.



Figure 4. Stay suturing of the eyelids together.



Figure 5. Incision encircling eyelids.

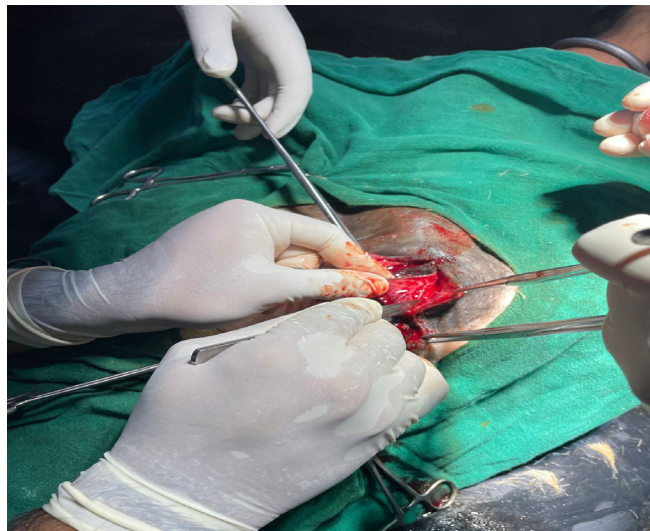


Figure 6. Resection of eyeball and associated structures.



Figure 7. Suturing of wound with gauze.



Figure 8. Antiseptic dressing.

impregnated gauze (Figure 7). Intramuscular injections of procaine penicillin and streptomycin (Dicrystcine- S; Sarabhai Zydus Animal Health Ltd., India) at a rate of 11,000 international units per kilogram bodyweight, as well as meloxicam (Melonex; Intas Pharmaceuticals; India) at a dose rate of 0.3 milligrams per kilogram body weight once day for 5 days were used as part of the post-operative treatment. In addition, pheniramine maleate (Avil; Aventis Pharma Ltd., India) at a dose rate of 1 milligram per kilogram bodyweight was given. The wound was antiseptically dressed daily with mupirocin (Bactroban; Galaxo Smithkline, India)-impregnated gauze until it healed completely (Figure 8). Sutures were cut on the 14<sup>th</sup> day post-operatively, and the animal healed properly with no weight loss or decreased milk production noted.

The economic importance of squamous cell carcinoma in bovine eyes is significant because it results in loss of weight, reduced production, and higher therapeutic expenditures. As per Taş *et al.* (2009), it is most common in mature and geriatric animals. It appears that the ages of animals in this investigation are consistent with the results of the research. Choosing surgical intervention from among the therapy choices is significant since it is simple to implement, has a low risk of complications, and is inexpensive. Exenetration of the eye orbit is an inexpensive operation that can alleviate painful and severe ocular conditions while also preventing additional tissue damage, especially when vision restoration is not possible (Anderson and Schulz, 2010), and when conservative treatments are not found helpful. With no anaesthetic complications, the retrobulbar and Peterson nerve blocks for motor and sensory blocking of the orbit and adjacent tissues are relatively safe to use and also provide the extra advantage of achieving local ocular analgesia (Skarda, 1986; Accola *et al.*, 2006) and decreasing

the need for supplementary postoperative analgesia (Myrna *et al.*, 2010).

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