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# An Unusual Case of Squamous Cell Carcinoma of Eye in a Dog: A Case Study

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## Abstract

Squamous cell carcinoma (SCC) is a malignant neoplasia affecting squamous epithelial cells and usually superficial. A six years old male crossbred dog was presented with a soft, pink, multinodular growth on the mucocutaneous junction protruding from right medial canthus of lower eye lid since 2 month. The mass was surgically excised. The tumour was diagnosed as a squamous cell carcinoma based on histopathological evaluation which revealed anaplastic keratinocytes, multiple mitotic figures and epithelial pearl formation. Successful surgical management and histopathological diagnosis of an incidence of ocular SCC in a crossbred dog is placed on record.

**Key words:** Dog, Eye, Squamous cell carcinoma, Hyperchromasia

## Introduction

Skin of canines is most common seat for tumours. Unlike cats, skin tumours in the dog are more likely to be benign than malignant (Kashyap *et al.*, 2013). Squamous cell carcinoma (SCC) is a malignant neoplasia affecting squamous epithelial cells and is usually superficial (Song *et al.*, 2012). In India, SCC is generally reported in cattle with the affections of the horn and eye (Singh *et al*., 2013). In general, ocular SCCs affecting any structure of the eye globe and adnexa are less frequent in dogs (Pigatto *et al.*, 2010). In the present report, successful surgical management and histopathological diagnosis of an incidence of ocular SCC in a crossbred dog is placed on record.

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**Case presentation**

A six years old male crossbred dog was presented with a multi nodular growthon the mucocutaneous junction and protruding from right lower eye lid **(Fig. 1)** and visual impairment. Further anamnesis revealed that the mass grew rapidly within a short span of last 2 month. Clinical and haematological parameters were in the normal range. Upon palpation the superficial lymph nodes were normal in size. The owner was advised to withhold food for 12 h and water for 6 h prior to the surgical procedures. Ethical considerations were given due priority to minimize the pain and sufferings of the animal.

**Fig. 1: Squamous cell carcinoma, Dog. Gross appearance of multinodular pink tumorous growth at right medial canthus of lower eye lid**

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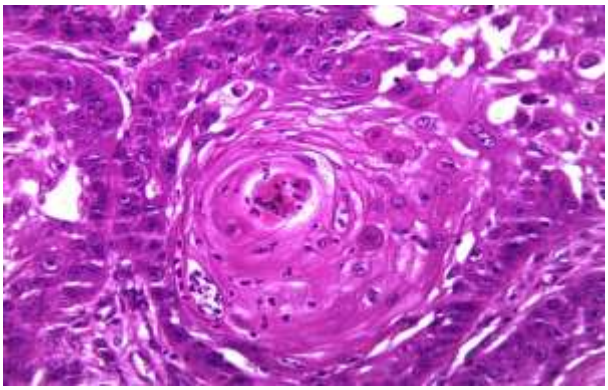

**Fig. 2: Squamous cell carcinoma, Dog. Hyperchromatic cord like anaplastic squamous epithelial cells with epithelial pearl formation. (H&E X 400)**

The dog was pre-medicated with atropine sulphate (0.04 mg/kg body weight, intramuscularly) and sedated using xylazine (1 mg/kg body weight, intramuscularly). The area of the spontaneous growth was cleaned and scrubbed with povidone iodine. Routine aseptic precautions were observed throughout the procedure. General anaesthesia was induced and maintained intravenously with ketamine hydrochloride (5 mg/kg body weight). An elliptical skin incision was given near the tumour growth, subcutaneous tissues were bluntly separated and the haemostasis, if any was achieved by forcipressure. Being a sessile and non-capsulated growth, a part of healthy tissues involving 0.5 cm at margins were also included to avoid likelihood of recurrence. The growth was removed, weighed and representative tissue samples were preserved directly in 10% neutral buffered formalin. The surgical wound was closed by approximation of the skin layer in horizontal mattress suturing pattern using Vicryl size 1. Routine post-operative care with antibiotics, analgesics and surgical wound dressing were performed. Skin sutures were removed 12$^{th}$ day post operatively. The dog witnessed sound health without recurrence during a follow up period of 1 year. Following fixation and overnight washing the tissues were dehydrated in ascending grades of alcohol; cleared in xylene and embedded in paraffin at 58°C. The paraffin embedded tissue sections of 5 µm were obtained and stained with hematoxylin and eosin as described by Luna (1972) with slight modifications. The stained sections were examined under light microscope and the lesions were recorded.

## Results and Discusion

Macroscopically the broad based neoplastic growth was soft in consistency; pink in color measured 3x2x1.5cm and weighed 45 grams. Microscopically, tissue section showed cords of hyperchromatic squamous epithelial cell masses surrounded by the connective tissue stroma. Multiple mitotic figures, loss of polarity, cellular pleomorphism (round to polygonal), abundant cytoplasm, with irregularly shaped immature nuclei characterized by a high grade of anisokaryosis (**Fig. 2**) were also recorded. The neoplastic cells showed the downward penetration and mild infiltration of polymorphonuclear cells and some lymphocytes. The carcinoma was well differentiated and exhibited kerato-hyalinisation in the form of epithelial pearl.

The clinical, gross and microscopic findings in the present case simulated well with the previous reports (Song *et al.*, 2012; Kashyap *et al.*, 2013; Singh *et al*., 2013).Being a malignant neoplastic condition, a part of adjacent tissues were incorporated in excision so as to minimize the chances of recurrence. However, Withrow and Vail (2007) documented that the ocular SCC do not metastasize to distant locations which might be because of meagre chances of entry throughvessel wall by the tumorous cells.The normal size of superficial lymph nodes in the present case corroborates the observations of Withrow and Vail (2007).

Among all species SCC may occur in young animals, but the incidence increases with age usually 9-14 years in cats and between 6 to 10 years in dogs (Dayananda *et al.*, 2009; Kashyap*et al.*, 2013). In the present case too, the dog was in the most susceptible age for neoplastic growth. Increased exposure to solar radiation, lack of adnexal pigmentation, chronic ocular surface irritation (microtrauma), viral agents, hormonal, genetic and immunologic factors may precipitate ocular SCC in case of dogs and cats (Pigatto*et al.*, 2010; Takiyama*et al.*, 2010).

## Conclusion

Thus, it was concluded that confirmatory diagnosis could be achieved by histopathological evaluationof surgically resected biopsy samples in case of ocular SCC.

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