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**Clinical case**

# Successful Treatment of Meibomian Carcinoma in a Cow

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## ABSTRACT

**Objective**. The aim of this study was to present the diagnosis and treatment method of an extraordinary meibomian carcinoma in a cow. **Materials and methods.** A 5-year-old, Holstein cow presented with a right lower eyelid mass with ocular signs of mucopurulent discharge, conjunctival hyperemia and ocular discomfort. On physical examination, it was noted that the general condition was good, but there was a mass lesion in the third eyelid. The mass arising from the inner surface of the right lower eyelid was surgically excised and examined histopathologically. **Results.** The tumor mass was defined as meibomian carcinoma after microscopic examination. **Conclusions.** Meibomian carcinoma is a rare disease that shows certain features of malignancy such as invasion and pleomorphism as well as mitosis. This case presentation can be considered to contribute to the literature as this is a rare tumor in cattle, to the best of our knowledge it is the first report of a case originating from the third eyelid, and wide surgical excision was sufficient for treatment.

**Keywords:** Cattle; cow; glandular neoplasms; malignant; nictitating membrane (*Source: MeSH, NLM)*.

## RESUMEN

**Objetivo.** El objetivo de este estudio fue presentar el método de diagnóstico y tratamiento de un carcinoma de Meibomio extraordinario en una vaca. **Materiales y métodos.** Una vaca Holstein de 5 años presentó una masa en el párpado inferior derecho con signos oculares de secreción mucopurulenta, hiperemia conjuntival y malestar ocular. En la exploración física se constató que el estado general era bueno, pero había una masa en el tercer párpado. La masa que surge de la superficie interna del párpado inferior derecho se extirpó quirúrgicamente y se examinó histopatológicamente. **Resultados.** La masa tumoral se definió como carcinoma de Meibomio después del examen microscópico. **Conclusiones.** El carcinoma de Meibomio es una enfermedad rara que muestra ciertas características de malignidad, como invasión y pleomorfismo, así como mitosis. Se puede considerar que la presentación de este caso contribuye a la literatura, ya que se trata de un tumor poco común en el ganado bovino; hasta donde sabemos, es el primer informe de un caso que se origina en el tercer párpado y la escisión quirúrgica amplia fue suficiente para el tratamiento.

**Palabras clave:** Bovinos; malignas; membrana nictitante; neoplasias glandulares; vacas *(Fuentes: MeSH, NLM)*.

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## INTRODUCTION

The Meibomian glands are located at the edge of the eyelids, and the fatty secretions produced by these glands are the most important component of the precorneal tear layer. (1). Tumours of the third eyelid gland generally emerge from the base of the third eyelid and are noticed with swelling. They grow slowly and can lead to discharge in the eye and blephorospasm. Corneal damage and ulceration are seen in advanced cases. Meibomian gland tumours are generally non-invasive adenomas with a benign course. In dogs, Meibomian gland adenocarcinomas constitute 13% of all conjunctival tumours. Morphology shows variations and a moderate level of infiltrative growth is observed. It may appear like glandula nictitans prolapse (2).

## Case presentation

A 5-year-old Holstein cow was brought to the Department of Surgery Clinic, Veterinary Faculty, Adnan Menderes University, with the complaints of discharge, conjunctival hyperemia, swelling and pain in the right eye. The anamnesis and physical examination showed the animal to be in general good condition, but a mass lesion was observed on the third eyelid. The mass was 7 x 5 x 3mm in size and irregular in structure (Figures 1, 2). No lesion was determined in adjacent tissues or local lymph nodes. As a result of the ophthalmological examination, there was determined to be no problem in the globe or cornea of the right eye and the left eye was healthy.

For sedation of the patient, xylazine hydrochloride (0.05mg/kg intramuscular, Xylazine Bio 2.50% Bioveta) was administered, followed by retrobulbar nerve blockage and infiltration anaesthesia of the third eyelid with lidocaine hydrochloride (10-12ml, Adocaine 20mg/ml, Sanovel). The borders of the mass were determined and held with hemostatic clips. Simple continuous sutures were applied with 2/0 polyglactin 910 (Vicryl, Ethicon) surgical thread behind the line where the incision was to be made. Protecting the suture line, the incision was made 15mm distant from the endpoint of the mass, and in this way the mass was removed. In the postoperative period, topical oxytetracycline hydrochloride and polymixin B (Terramycin eye ointment 5 mg/gr, Pfizer), diclofenac sodium (0.1% inflaced eye drops, Bilim) and acetylcysteine (Brunac 5% eye drops, Bio-gen) were applied for 10 days. As an anti-inflammatory, meloxicam at a dose of 0.5mg/kg was administered systemically for 3 days. No complications developed in the postoperative period.

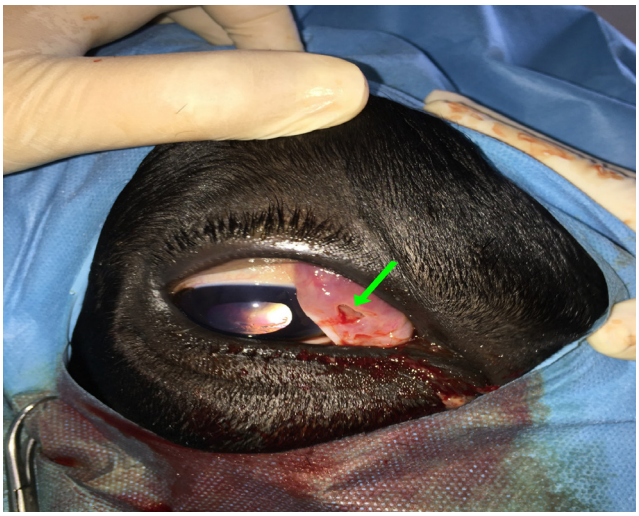

**Figure 1.** Preoperative view of the mass determined on the third eyelid of the right eye. Arrow showing the iatrogenic ulcer on the palpebra nictitans that was formed during the examination of the veterinarian who referred us.

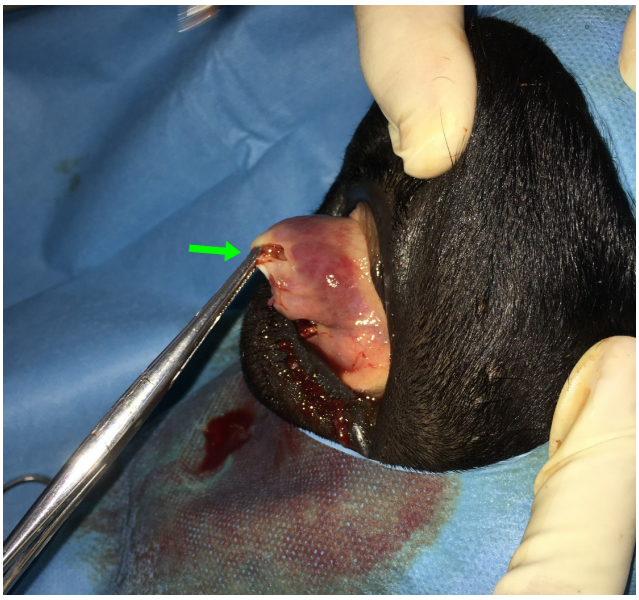

**Figure 2.** Preoperative view of the mass of irregular structure. The third eyelid and mass were quite fragile. Arrow showing the iatrogenic ulcer.

The tumour had irregular lobular/adenoid structures with a small amount of stroma. The tumour cells showed varying degrees of sebaceous differentiation and cytological atypia was evident. Atypical tumour cells have cytoplasm containing vacuoles of varying sizes with evident hypochromatic nuclei of different sizes in shapes varying from oval to round. Mitotic figures are rare. In the tumour stroma in this case there was seen to be a small amount of connective tissue and collagen bundles, together with mononuclear cell infiltration (Figures 3, 4). As a result of microscopic examination, the tumour mass was identified as Meibomian carcinoma.

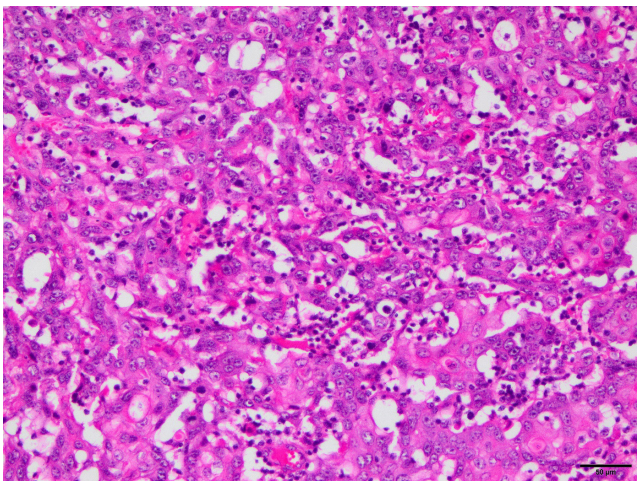

**Figure 3.** Atypical tumour cells formed of irregular lobular/adenoid structures,H&E.

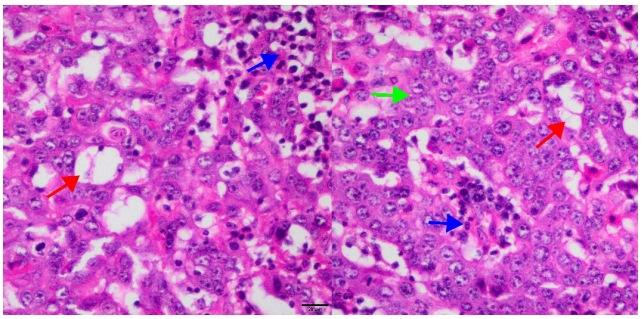

**Figure 4.** Blue arrows showing inflammatory cell infiltrations. Red arrows showing cytoplasmic vacuoles associated with sebaceous differentiation in atypical tumour cells. Green arrows showing tumour cells with atypical characteristics, H&E.

## DISCUSSION

In a study by Lucena et al (3), the eye was reported to be the fourth most affected organ when ocular tumours occurring in cattle were compared with other organs and systems. In that study, ocular and periorbital tissue tumours were determined in 88 cases, of which one was papilloma and the others were smooth-cell carcinoma. In another study conducted on dogs, Meibomian gland tumours were seen to be among the frequently encountered (44-70%) tumours of the eyelid (4).

Although the eyelid is the most common localisation in humans, only two cases of Meibomian carcinoma in cattle have been reported (5,6). The most commonly seen eyelid neoplasm in cattle is squamous cell carcinoma (7,8).

Meibomian carcinoma cannot be roughly differentiated from a benign equivalent on the eyelid. The histology of Meibomian carcinoma is like that which has been previously explained for sebaceous carcinoma. It has been reported that Meibomian carcinoma is locally invasive and destructive. Sebaceous carcinomas in regions other than the eyelid are rare in large animals and are generally seen in adult older animals (9).

The majority of Meibomian gland tumours, other than Meibomian carcinoma, are benign. Of these, Meibomian epithelioma including low-grade malignancy can be misdiagnosed as Meibomian carcinoma because of undifferentiated cells of the tumour (10). Therefore, Meibomian epithelioma must be histopathologically differentiated from Meibomian carcinoma, which are formed of irregular lobules of poorly differentiated pleomorphic basal cells. The basal cells of Meibomian carcinoma are extremely varied in size and appearance, including pleomorphic nuclei and finely vacuolated cytoplasm, while Meibomian epithelioma exhibits smaller basal cells of a single shape (10).

Taking into consideration the number of mitosis, cases of Meibomian epithelioma are usually classified as carcinoma. However, actual Meibomian carcinoma are rarely encountered, and it is a disease which shows definite characteristics of malignancy such as pleomorphism and invasion, in addition to mitosis (11). In the current case, the diagnosis of Meibomian carcinoma was made histopathologically.

In sebaceous gland tumours which are diagnosed early, total excision is of great importance (12). When there is no orbital spread, treatment is based on wide excision (13). In parallel with

this information, following the wide surgical excision performed in the early period in the current case, chemotherapy was not applied and no complications or recurrence developed in the postoperative period.

Meibomian carcinoma has been reported to be extremely rare in large animals. In a study by Martins and Barros (14), 9327 cattle with ocular disease were evaluated with histopathological examination and a diagnosis was made of sebaceous carcinoma originating from the conjunctiva in only one animal. A Simmental cow was reported as a case of Meibomian carcinoma that was covering the whole eye globe originating from the lower eyelid and had spread in a limited way to the upper eyelid (5).

As Meibomian carcinoma basically shows similar characteristics to sebaceous adenocarcinoma in the histopathological diagnosis, diagnostic criteria are defined according to sebaceous carcinoma, but when differentiation is poor, it may be confused with basal cell or squamous cell carcinoma (15). In the case presented here, the tumor showed adenoid/lobular structures formed of tumor cells with cytoplasmic vacuoles of varying sizes, with the atypical characteristics seen in Meibomian carcinomas.

In conclusion this case can be considered to contribute to the literature as this was a tumour rarely seen in cattle, it originated from the third eyelid, and wide surgical excision was found to be sufficient in treatment.

**Conflict of interests**

The authors declare no conflict of interest with publication of this manuscript.

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