

Lower Eyelid Reconstructive Surgery after Melanoma Resection in a Horse

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Abstract

A 5-year-old gray Arabian horse was presented with a left lower eyelid mass. No other abnormality was detected on the affected eye in a general eye examination. The mass was histologically diagnosed as a melanoma. As treatment, surgery was proposed. During the surgery complete excision of the tumor was performed. The extent of skin loss in the lower eyelid required plastic reconstruction, so the sliding skin flap technique was performed. Successful treatment of lower eyelid melanoma was achieved by surgical removal. There has been no recurrence during the subsequent 6 months. In this case, reconstruction of the lower eyelid by sliding skin flap resulted in satisfactory functional and cosmetic outcome.

Keywords: Horse; Lower Eyelid; Melanoma; Blepharoplasty; Sliding skin flap

Introduction

Reconstructive blepharoplasty is indicated in any horse in which trauma or surgical excision has removed more than one third of the eyelid margin. This type of surgery is best performed under general anaesthesia. It should be remembered that although the eyelid skin is pliable, the surrounding facial skin is relatively inelastic and may not stretch readily to provide donor skin [1,2].

Melanomas are common in grey horses and rare in other colors of horse. They usually present as nodules in the eyelid and often involve the eyelid margin. They rarely ulcerate and are most often of a benign slow growing nature [2,3]. They are most often benign in the horses [4] and dog [5], but frequently malignant in the cat [6]. If the eyelid mass involves less than about one third of the eyelid margin, removal can be performed in a routine fashion. If the mass involves more than one third of the eyelid margin, reconstruction of the eyelid will be necessary. This may require more complicated procedures, and sometimes more than one surgery will be needed to fully reconstruct the eyelid [1,2,7].

The case report here describes reconstructive surgery of the lower eyelid with a sliding skin flap technique after surgical excision of a melanoma in Arabian horse.

Case Report

A 5-year-old gray Arabian horse was presented to Mansoura veterinary teaching hospital of the faculty of veterinary medicine mansoura university, Mansoura, Egypt for evaluation of a left lower eyelid mass (Figure 1A). The mass had been present for approximately 6 months but had recently increased in size. The horse was generally in good physical condition. Ophthalmic examination and hematologic test appeared normal except the mass of the lower eyelid.

On the day of surgery, the horse was premedicated with intravenous injection of acepromazine (Vetranquil 1%, Libourne Cedex, France) at a dose of 0.05 mg/kg BW. Anesthesia was induced and maintained by infusion of a freshly prepared mixture of 500 mg xylazine HCl, 40 mg midazolam, and 2 g ketamine HCl dissolved in 1 L of 5% dextrose and the animal was restraint in the lateral recumbency. After surgical resection of the mass (Figure 1B) a significant loss of tissue was appeared which require a surgical technique for reconstruction of the lower eyelid. The incisions were extended vertically for twice the height

of the excised portion (Figure 2A). Slightly diverging incisions allow for wound contracture were performed. Triangular pieces of skin were excised at the end of each incision (Figure 2A). These triangles facilitate closure without skin folds (dog-ears) and help to distribute tension.

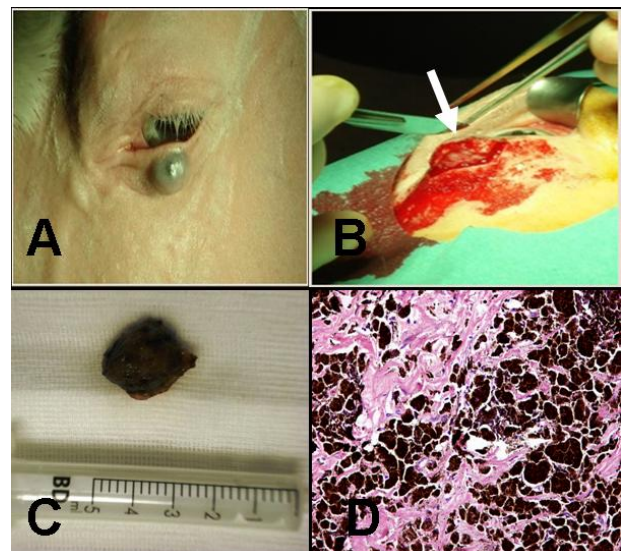


Figure 1: A. A 6-year-old gray Arabian horse with black non ulcerated nodule, hemispherical in shape and raised from the skin surface of the lower eyelid. B. Showing surgical resection of the mass (white arrow), the horse restrained in lateral recumbency under general anaesthesia. C. A black non-ulcerated nodular mass after resection in a 6-year-old gray Arabian horse. The mass was measured about 1x1.5x0.5 cm. D. Melanotic melanoma; 6-year-old gray Arabian horse. X520, H&E. Note intracytoplasmic dense brownish black pigment (melanin) which obscures the cellular details besides fibrous tissue trabeculae were seen among them.

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The sides of the triangle was approximate the height of the excised portion. Surrounding skin was undermined with scissors to provide skin mobility. Skin closure was begun at the eyelid margin (Figure 2B) using a 4-0 polyglactin 910 (PDS, Ethicon). The flap was sutured to the underlying conjunctiva along the eyelid margin with 4-0 PDS in a simple continuous pattern (Figure 2C). Flunixin-Meglumin (1.1 mg/kg) was given to animal for 5 days postoperatively. A follow-up through the phone for 6 months post-surgery was performed.

Results

The lesion appeared as black non ulcerated nodule, hemispherical in shape and rose from the skin surface. The mass was centered and adjacent to the lower eyelid margin which extend in length and include more than one third of the lower eyelid. The size of the excised mass was approximately 1×1.5×0.5 cm (Figure 1C).

Microscopic examination of the lesion showed a dome-shaped extrusion of the epidermis and the presence of heavily pigmented areas consisted of concentric ring of cells at different densities, each being separated by connective tissue. In association with these areas, lightly pigmented tumorous masses were found, similar to those near apocrine sweat glands in the plaque-like tumours. Apoptotic bodies were present (Figure 1D).

The wound was healed by first intention and the suture was removed within 2 weeks after the surgery (Figure 2D).

During a follow-up through the phone for 6 months post-surgery, the horse completely recovered and any recurrence or complications was not observed. Reconstruction of the lower eyelid resulted in satisfactory functional and cosmetic outcome.

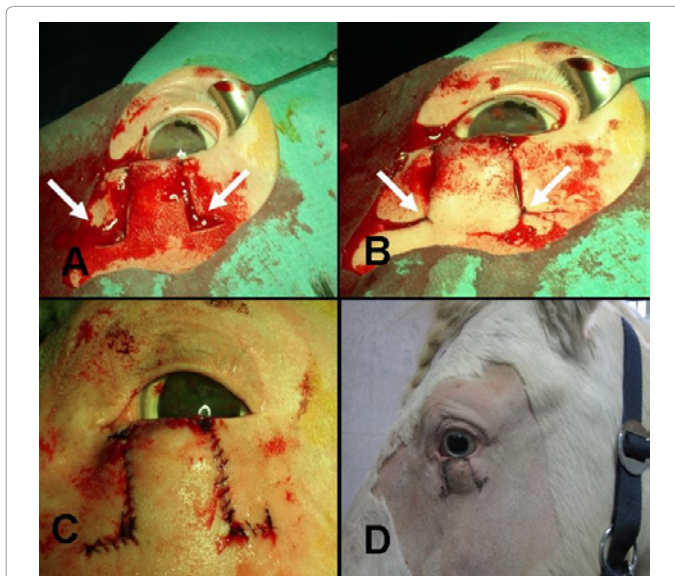


Figure 2: A. Vertical extension of the incisions in the lower eyelid of a 6-year-old gray Arabian horse twice the height of the excised portion with slight diversion. A triangular piece of skin was excised at the end of each incision (white arrows). The sides of the triangle is approximate the height of the excised portion. B. Showing closure of the side of the triangle and the top of the flap (white arrows) was performed using 4-0 PDS. C. The flap was sutured to the underlying conjunctiva along the eyelid margin with 4-0 PDS in a simple continuous pattern. D. Removal of the sutures and healing of the lower eyelid wound 2 weeks after surgery in a 6-year-old gray Arabian horse.

Discussion

Successful treatment of lower eyelid melanoma can be achieved by “en bloc” surgical removal. In this case, reconstruction of the lower eyelid by sliding skin flap resulted in satisfactory functional and cosmetic outcome.

The equine eye and adnexa are frequent sites of tumors [8-10]. The eyelid, in particular, has been reported to be affected by squamous cell carcinoma, sarcoïd, melanoma, and with much less frequency by papillomas, adenomas, adenocarcinomas, mast cell tumors, basal cell tumour, haemangioma, hemangiosarcomas, lymphosarcomas, fibromas, and schwannomas [8-10]. Among these, squamous cell carcinoma and sarcoïd are by far the most common tumours of the equine eyelid. Melanomas are commonly found as nodules in the eyelids and can involve orbital tissues as well, it was the commonest intraocular tumour of the horse but in any case it is still rare at this site [3,11]. As far as we know, this is the first description of a lower eyelid melanoma presenting in the horse, which treated with reconstructive blepharoplasty. Welker et al. [7] performed a wide surgical excision and H-blepharoplasty of the lower eyelid for removal of a neoplasm’s in 14 cattle, and he conclude that, healing was by first intention, and cosmetic results as well as lid function were satisfactory in all cases.

Surgical excision is a realistic proposition provided that the tumour can be removed without significant skin damage, eyelid functional compromise or scarring. This usually involves removal of a small portion of the eyelid margin and scrupulous reconstructive surgery to preclude the complications arising from poor eyelid function [2].

Small superficial triangular central defects in the lower eyelids can be closed directly, creating a new lid edge in the lateral canthus (inverse triangles method). Larger superficial triangular defects may be covered using a distant inverse triangle to gain tissue (rotating flap technique). Full thickness lower eyelid defects can be corrected successfully by direct apposition if the defect does not exceed more than one-third of the eyelid margin [12]. Wider square defects require an advancement flap obtained by H-plasty [7,12]. Extensive defects involving the dorsolateral eyelid can be covered using a pedicle graft or by a cross-lid flap obtained from the lower eyelid [13]. Large upper eyelid defects have been managed with a modified cross-lid flap technique [14,15]. Complete loss of the lower eyelid with canthus preservation can be managed by a lip-to-lid technique [16,17]. Full thickness rectangular defects of the lower eyelid can be reconstructed creating a full thickness advancement flap from the upper eyelid, using the so-called “bucket handle” technique [18]. In this case, the part of the eyelid removed with the tumour is large, from one-quarter to one-third of its length, for such reason this defect was reconstructed with sliding skin flap technique. A slight overcorrection that is, bringing the flap slightly beyond the desired level of the eyelid margin results in a better cosmetic appearance after wound contracture in such technique. Similar reconstructed blepharoplasty of the eyelids defects were performed in cattle [7] and dogs [18-21].

It was concluded that, blepharoplasty with a sliding skin flap technique should be considered for reconstruction of the lower eyelid defects in horses with $\leq 50\%$ tissue loss of the lid margin following resection of a tumour mass.

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