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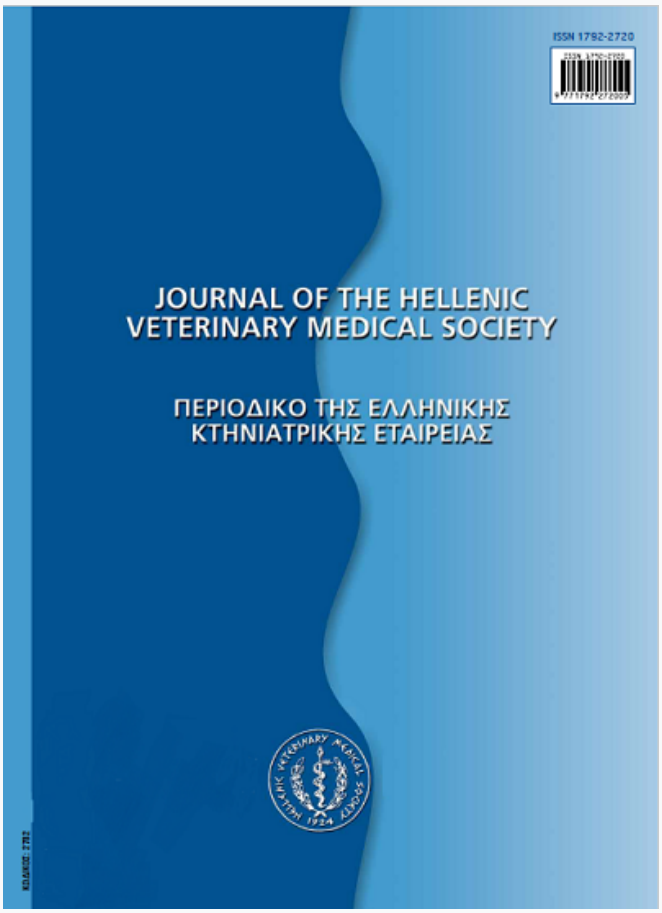

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K HATATE, J SASAKI, M KATAYAMA, S SEKIGUCHI, N YAMAGISHI

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Case Report
Κλινικό Περιστατικό

Effective hands-on treatment of a corneal dermoid in a calf

Hatate K.[1,2], Sasaki J.[1], Katayama M.[1], Sekiguchi S.[3], Yamagishi N.[1,2]

[1] *Department of Veterinary Medicine, Faculty of Agriculture, Iwate University, Japan*

[2] *Department of Veterinary Medicine, Obihiro University of Agriculture and Veterinary Medicine, Japan*

[3] *Sekiguchi Large Animal Clinic, Kuji, Japan.*

ABSTRACT. In the present report, an effective hands-on treatment for a corneal dermoid that extended to the third eyelid, in the left eye of a Japanese Black calf is described. Xylazine sedation and local infiltration anesthesia with 2% lidocaine on the upper and lower eyelids as well as the third eyelid, in combination with topical anesthesia was performed. A Weitlaner retractor allowed immobilizing the patient's eyeball during surgery, and superficial lamellar keratectomy was performed to surgically excise the mass. A temporary tarsorrhaphy was placed in order to allow the surgical corneal wound to heal as well as to treat keratitis. After an uneventful postoperative recovery, complete cure 70 days post-operatively was achived. This hands-on method represents a practical and effective treatment for ocular dermoids in calves.

Keywords: Calf, hands-on treatment, ocular dermoid, temporary tarsorrhaphy

Corresponding Author:
Norio Yamagishi.
2-11 Inada, Nishi, Obihiro, Hokkaido 080-8555, Japan
e-mail address: yamagishi@obihiro.ac.jp

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CASE HISTORY

A 1-month-old male Japanese Black calf (weight, 77 kg) was referred to the Iwate University Veterinary Teaching Hospital with a history of palpebral enlargement and epiphora on the left eye. Upon ophthalmic examination, a bunch of hairs were protruding from the left eyeball, oriented from the lower eyelid (Figure 1A). The hairs originated from a mass attached to the cornea, bulbar conjunctiva and bulbar aspect of the third eyelid (Figure 1B). Superficial corneal ulceration and corneal opacity (keratitis) as a result of trichiasis were also noticed.

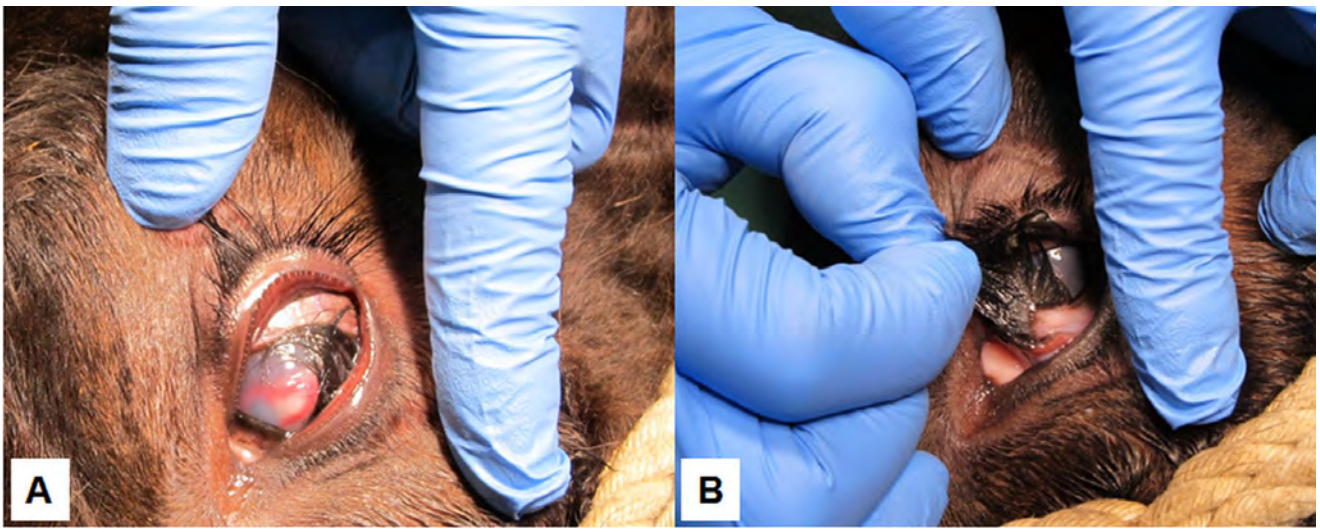
The calf was sedated with 0.1 mg/kg body weight (BW) xylazine intravenously while procaine penicillin G 20,000 unit/kg BW was also administered intramuscularly. The animal was positioned in the right lateral recumbency, with the left side of the face upward. The skin around the left eye was prepared aseptically. Local infiltration anesthesia was performed by injection with a 21 gauge needle of 5-mL of 2% lidocaine solution, along the upper and lower eyelids (Figure 2A). Additionally, 1-mL lidocaine solution was instilled on the ocular surface.

A Weitlaner retractor was used to keep the eye open and the third eyelid was gently clamped by the assistant to suppress eye movement. In order to perform superficial lamellar keratectomy, the mass was retracted with a pair of tissue forceps, and peeled off from the third eyelid and the cornea using a surgical scalpel with a no. 11 blade (Feather Safety Razor, Osaka, Japan) (Figure 2B and C). After hemostasis and irrigation, an erythromycin-containing ophthalmic ointment (Elicosin ophthalmic ointment; Santen Pharmaceutical, Osaka, Japan) was applied inside of the conjunctival sac. A temporary tarsorrhaphy was performed (Figure 2D) with one horizontal synthetic absorbable mattress suture (Coated VICRYL 2-0, J333H; Ethicon, Somerville, NJ, USA) and infusion tubing. The surgery was completed in 30 min after xylazine administration, whereas the calf was given intravenous (0.01 mg/kg BW) atipamezole to reverse the sedation.

After complete recovery from sedation the calf returned to the farm. Procaine penicillin G (20,000 unit/kg BW, intramuscularly, SID) was suggested for 3 days postoperatively. The temporary tarsorrhaphy was removed 14 days post-op; Formation of granulation tissue on the cornea and the third eyelid were noticed whereas the corneal opacity was improved (Figure 3A). No granulation tissue was seen 70 days post-operatively (Figure 3B).

The histopathological examination confirmed that the hairy mass (Figure 4A) was an ocular dermoid accompanied by keratinized squamous epithelium with deposition of melanin and keratohyaline granules (Figure 4B). The dermic layer had hair follicles and the sebaceous and sweat glands were associated with lymphocytic infiltration (Figure 4C).

Fig 1. Pre-surgical photographs of the ocular dermoid in a Japanese Black calf. (A) Corneal opacity (keratitis) and hairs originating from the ventral eyelid. (B) The mass located in the cornea and the third eyelid.



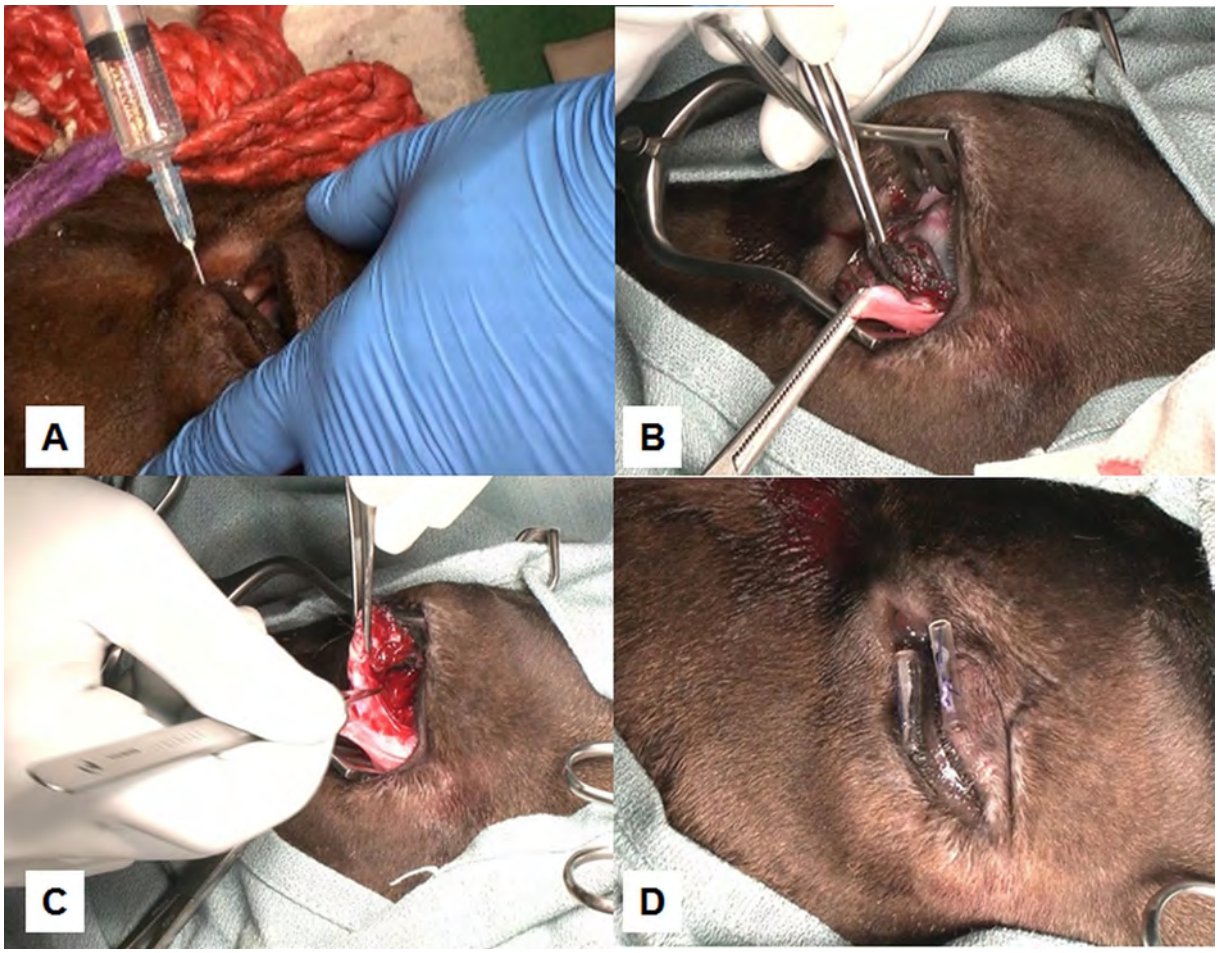


Fig 2. Photographs of surgical excision of an ocular dermoid in a Japanese Black calf. (A) Inserting the needle to achieve local infiltration anesthesia with the angle aimed at the third eyelid. (B) Use of a Weitlaner retractor and appropriate positioning of the third eyelid by the assistant. (C) The mass peeled off by applying a superficial lamellar keratectomy. (D) Temporary tarsorrhaphy placed on the left eyelid.

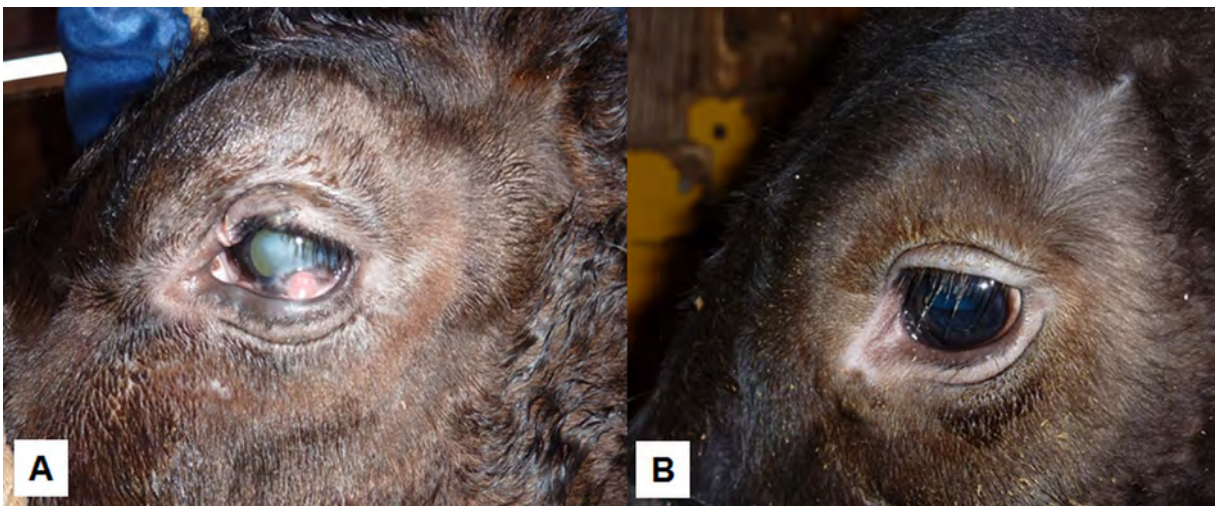
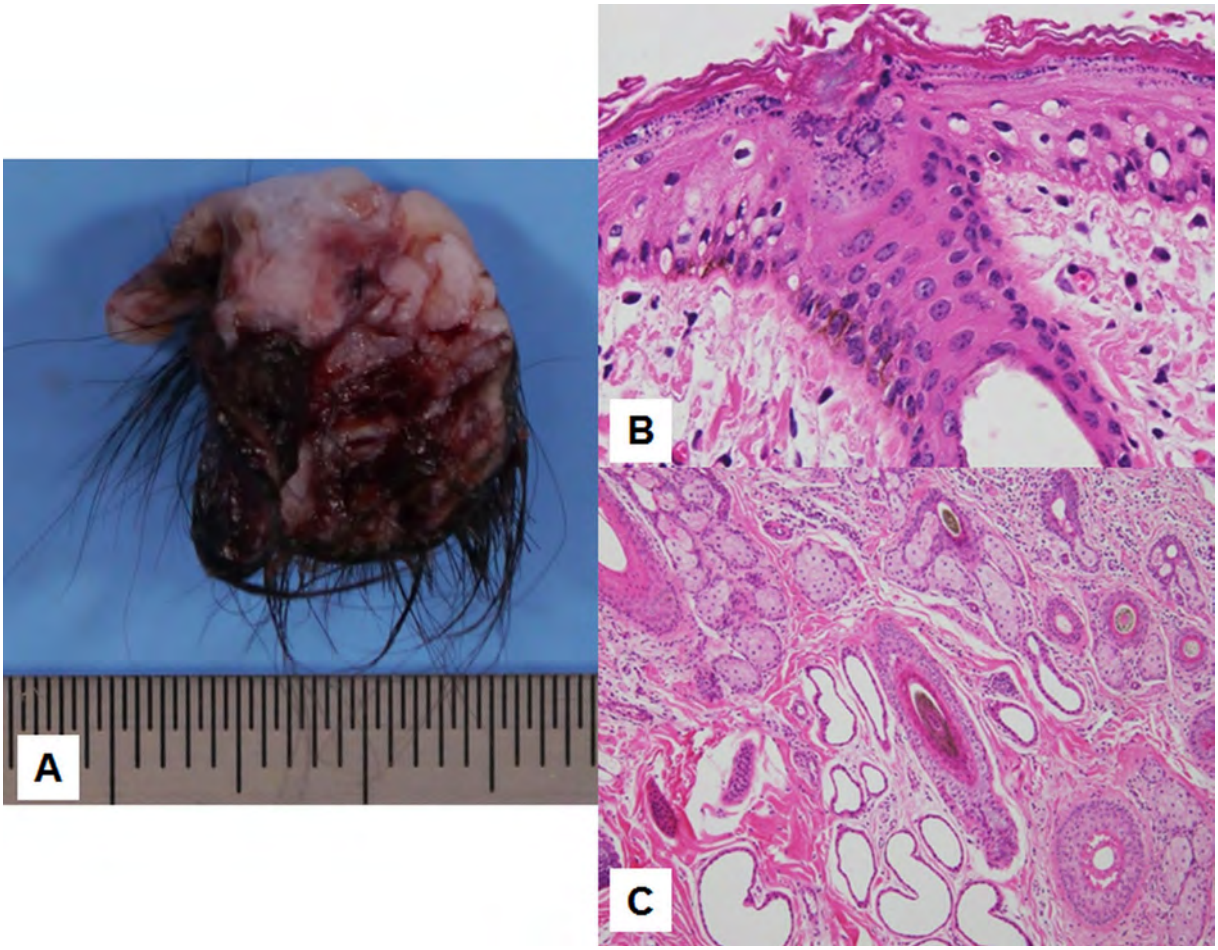


Fig 3. Post-surgical photographs of an ocular dermoid in a Japanese Black calf. (A) Corneal opacity had improved 14 days after surgery, associated with the formation of granulation tissue on the cornea and third eyelid. (B) The granulation tissue had disappeared completely 70 days after surgery.

Fig 4. Gross (A) and histopathological (B and C) findings of the ocular dermoid resected from a Japanese Black calf. (A) Macroscopic appearance of the resected tissue with hairs. (B) Keratinized squamous epithelium with melanin and keratohyaline granules; hematoxylin-eosin staining, ×240. (C) Hair follicles and the sebaceous and sweat glands in the dermal layer; hematoxylin-eosin staining, ×100.



DISCUSSION

An ocular dermoid, which is a congenital ophthalmologic disease of calves, is a choristoma that may be found in the cornea, conjunctiva, limbus, or eyelid (Jena et al., 2015). Dermoid cysts originate as ectopic deposition of epidermal tissues during closure of the neural tube (Alam and Rahman, 2012). The cyst includes accessory organs of the skin, such as the epidermis, hair, hair follicles, and glandular epithelium (Kiliç et al., 2012). This hairy mass irritates the surface of the eye and causes epiphora and ocular inflammation (Jena et al., 2015). The eyelids, cornea, conjunctiva, and sclera are the major sites for ocular dermoids (Alam and Rahman, 2012; Yeruham et al., 2012). Surgical removal of these masses is recommended, and superficial lamellar keratectomy is the most common surgical procedure (Fubini and Ducharme, 2004). Compared with the previous reports (Simon et al., 2010; Alam and Rahman, 2012; Kiliç et al., 2012; Mudasir et al., 2012; Yeruham et al., 2012; Jena et al., 2015; Nagar et al., 2015), the present report precisely describes our experience in surgically treating an ocular dermoid in a calf with an uneventful prognosis.

The calf in this report was placed in the lateral recumbency under xylazine sedation, which is the most common method to immobilize cattle. A retrobulbar nerve block was used in previous reports to surgically resect corneal dermoids in cattle under sedation (Simon et al., 2010; Yeruham et al., 2012; Jena et al, 2015; Nagar et al., 2015). The advantage of this nerve block is immobilization of the eyeball during surgery (Riebold et al., 1995; Tranquilli et al., 2007). However, this technique requires more surgical skill to insert

the needle accurately into the retrobulbar space, which may induce several complications, such as an optic nerve injury, retrobulbar hemorrhage, or increased intraocular pressure (Tranquilli et al., 2007). Auriculopalpebral nerve block for ocular surgery in bovines has also been reported but this kind of anesthesia can be used only in combination with local anesthesia, since it does not provide analgesic effect (Simon et al., 2010; Mudasir et al., 2012; Nagar et al., 2015). In our case, local infiltration anesthesia was easily performed into the upper and lower eyelids, as well as the third eyelid in combination with topical anesthesia on the ocular surface. Although local anesthesia did not restrain eyeball movement, appropriate retention of the third eyelid with the use of a Weitraner retractor allowed a successful surgical procedure.

Corneal ulceration and keratitis are often observed in ocular dermoid cases, related to the ocular irritation caused by hairs on the mass (Kiliç et al., 2012; Yeruham et al., 2012; Jena et al, 2015; Nagar et al., 2015). In the present case, a temporary tarsorrhaphy was placed in order to allow the surgical corneal wound to heal as well as to treat keratitis, as shown previously by others (Simon et al., 2010; Nagar et al., 2015). The corneal opacity in our case healed 14 days after surgery, as the temporary tarsorrhaphy promoted repair of the corneal epithelium allowing an effective recovery (Birchard and Sherding, 2000).

The prevalence of ocular dermoids is lower in cattle compared to that in other species (Yeruham et al., 2012). Epiphora, blepharospasm, irritation and consequent inflammation of the ocular surface as well as visual impairment could be severe, so surgical removal is recommended. (Fubini and Ducharme, 2004). Our calf underwent a successful surgery after xylazine sedation in combination with local infiltration anesthesia with less anesthetic risk of complications. Even the globe motion was not eliminated; it was controlled adequately by the surgical assistant, allowing the successful removal of the dermoid. According to the authors' opinion, this effective surgical procedure represents a feasible and hands-on treatment for ocular dermoids in calves.

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