

## CASE REPORT

# A Rare Case of Congenital Ocular Dermoid and Acute Corneal Hydrops in a Calf

R. Uma Rani\*, P.N. Richard Jagatheesan, C. Sowbharenya, R. Arun, N. Palanivel<sup>1</sup>

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Ocular dermoid is a rare congenital defect in cattle characterized by the islands of skin that are histologically normal but misplaced to an abnormal location, usually the lateral canthus, medial canthus, conjunctiva, limbus, membrana nictitans, cornea and eyelid (Makra and Jakab, 2018) with the prevalence estimated between 0.002% and 0.4% (Yeruham *et al.*, 2002). Acute corneal hydrops (ACH) is an uncommon condition caused by localised rupture of Descemet's membrane allowing ingress of aqueous humour with rapid development of bullae and is reported in cats and horses (Pederson *et al.*, 2016; Schlesener *et al.*, 2018). To the best of the authors' knowledge, congenital ocular dermoid has not been reported in calf in association with ACH. The present report records a rare case of congenital corneoconjunctival dermoid and ACH and its successful surgical and medical management in a calf.

## CASE HISTORY AND OBSERVATIONS

A 10 days old Jersey crossbred female calf weighing 28 kg was presented to Veterinary Clinical Complex, Veterinary College and Research Institute, Theni, Tamil Nadu with the complaints of continuous lacrimation, and unusual mass in right eye since birth. The calf was born through normal delivery by a multiparous cow. Ophthalmic examination revealed epiphora, severe blepharospasm along with tissue outgrowth covered with hairs on the ventral cornea, limbus and bulbar conjunctiva extending up to the inner canthus of right eye (Fig. 1). Further examination of the right eye using slit-lamp biomicroscopy revealed mild stromal and epithelial microcystic edema, intrastromal clefts and conjunctival hyperemia. Examination of the left eye was normal. No other abnormality was detected on physical examination and all physiological parameters were within the normal limits. Based on the history, clinical and slit-lamp biomicroscopic examinations the case was diagnosed as congenital corneoconjunctival dermoid and acute corneal hydrops (ACH). Surgical excision was decided and the animal was prepared for aseptic surgery.

Veterinary College and Research Institute, Theni, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

<sup>1</sup>Department of Veterinary Pathology, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu, India

**Corresponding Author:** R. Uma Rani Veterinary College and Research Institute, Theni, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, e-mail: kamleshharini@yahoo.com

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## TREATMENT AND DISCUSSION

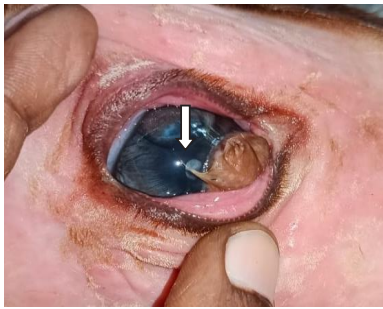
The calf was sedated with 0.1 mg/kg Xylazine intramuscularly and restrained on left lateral recumbency. Complete anaesthesia of eye, relaxation of globe and akinesia of eyelid were achieved with retrobulbar, supraorbital and auriculopalpebral nerve blocks using 2% lignocaine hydrochloride. The eyelashes of the right eye were trimmed and the eye was washed with normal saline solution to remove the contaminants. Temporary stay sutures with silk material were placed for proper exposure of operative field (Fig. 2). Superficial lamellar keratectomy was performed to remove the corneal portion of dermoid. The mass was grasped with forceps and tissue was completely excised (Fig. 3) with B.P blade No. 15 from the limbus and bulbar conjunctiva by careful dissection. The conjunctiva was sutured with simple interrupted sutures using chromic catgut No. 3-0 and the capillary bleeding was controlled by instillation of adrenaline solution. Partial temporary tarsorrhaphy was placed with two interrupted horizontal mattress sutures using 1-0 silk to provide tamponade to the corneal hydrops. Post-operatively, Ofloxacin eye drops

QID, hypertonic saline QID, and flurbiprofen eye drops BID for 14 days were administered. Systemic antibiotic with Ceftriaxone @ 10 mg/kg i/m for 5 days and Meloxicam 0.4 mg/kg intramuscular for 3 days were given. Healing of cornea and resolution of the ACH with no signs of blepharospasm and ocular discharges were observed on 15<sup>th</sup> day after removal of tarsorrhaphy sutures. There was no recurrence of dermoid till six months post-surgery.

Excised tissue sample was fixed in 10% neutral buffered formalin and processed for histopathological examination, which revealed moderately hyperplastic, keratinized stratified squamous epithelium overlying a thick collagenous stroma, which merged with conjunctival tissue containing submucosal glandular tissue, numerous, large, well developed hair follicles and adnexal structures superficially. A band of abortive hair follicles and adnexa were identified as haphazardly arranged clusters of epithelium, in the absence of hair bulbs, intermingled with tortuous lumina of

apocrine glands beneath the productive follicles suggestive of dermoid (Fig. 4, 5 & 6).

Ocular dermoid is a christoma of normal tissue formation at abnormal location. It is a congenital overgrowth of heterotrophic defect which appears at incorrect site of eye. Inclusion of surface ectoderm and neural crest-derived tissues occurs later in gestation, during closure of the fetal clefts when an ectodermal tissue abnormally invaginates and results in a pocket of differentiated dermal tissue (Cook, 2013). Dermoid cyst generally contains epidermis, dermis, fat, sebaceous glandular tissue, hairs, and hair follicles, but not all of the cutaneous appendages are found in each case. Although, ocular dermoid is believed not to be inherited in bovine (Nagar *et al.*, 2015), characteristics of autosomal recessive and polygenic inheritance were observed in Hereford cattle (Radostits *et al.*, 2000). Though the pathogenesis of ocular dermoids is unclear, Mason *et al.* (2003) reported association of dermoid in cattle with



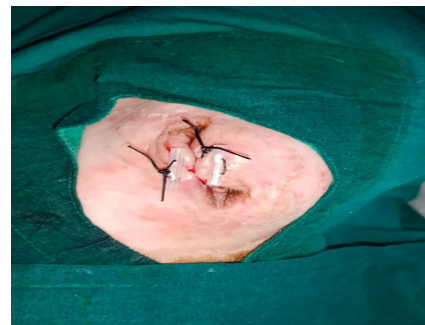
**Fig. 1:** Corneo-conjunctival dermoid and Acute corneal hydrops (arrow mark) in a calf



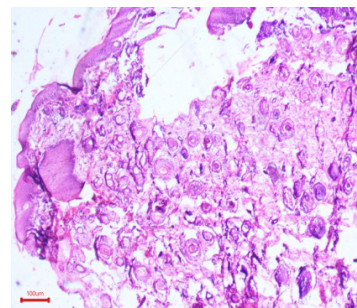
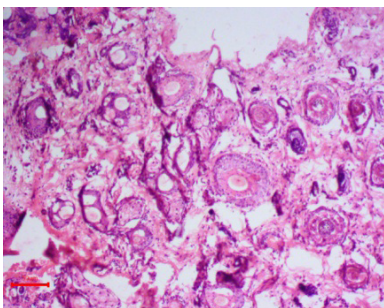
**Fig. 2:** Partial keratectomy to remove corneo-conjunctival dermoid



**Fig. 3:** Surgically excised ocular dermoid



**Fig. 4:** Temporary tarsorrhaphy



**Fig. 5 & 6:** Histopathology of corneo-conjunctival dermoid composed of hair follicle, hair shafts, and sebaceous glands (H & E. 40X)

hypovitaminosis A. Surgical removal is recommended as the best treatment option for corneal dermoid (Assefa, 2018) as also performed in the present case.

ACH is a pathological condition believed to result from a break in Descemet's membrane and the endothelium, leading to an influx of aqueous humor into the stroma associated with a focal area of corneal swelling. The location and size of the swollen area is related to where the linear break in Descemet occurred (O'Leary *et al.*, 2021). Presumptive trauma causing Descemet's membrane rupture was suspected in the horses (Pederson *et al.*, 2016) and in the present case the constant irritation of cornea due to the hairs in the dermoid might be the cause for ACH, blepharospasm and epiphora. ACH may be treated with conservative method or surgical intervention. Conservative approach included topical lubricants, antibiotics, cycloplegics to reduce pain and photophobia, hypertonic saline eye drops, topical steroids or NSAIDs (Maharana *et al.*, 2013). Temporary or a third eyelid flap was recommended as adjunctive tools in the management of ACH in horses (Pederson *et al.*, 2016), but in the present case temporary tarsorrhaphy was used to accelerate healing. ACH usually resolves alone or with medical therapy within six weeks (Oteyza *et al.*, 2021) and in the present case it resolved in 2 weeks period. ACH required rapid and targeted therapy to avoid vision- or globe-threatening complications such as corneal rupture (Pederson *et al.*, 2016). But in the present case early diagnosis, timely surgical intervention, appropriate medical management and temporary tarsorrhaphy would have resulted a positive outcome and could save the vision of a calf.

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## REFERENCES

- Assefa, A. (2018). Surgical management of congenital ocular dermoid cyst: A review. *Global Science Journal*, 6, 27-2018.

- Cook, C.S. (2013). Ocular embryology and congenital malformations In: *Veterinary Ophthalmology*. Ed. by Gelatt, K.N., Gilger, B.C. and Kern, T.J., 5<sup>th</sup> edn., John Wiley and Sons, Ames, I.A., pp. 22-25
- Maharana, P.K., Namrata, S., & Vajpayee, R.B. (2013). Some sort of trauma such as vigorous eye rubbing may be the inciting factor. *Indian Journal of Ophthalmology*, 61, 461-464.
- Makra, Z., & Jakab, C. (2018). Bilateral corneal dermoids and eyelid malformation in a colt: A case report. *Acta Veterinaria Brno*, 87, 73-76.
- Mason, C.S., Buxton, D., & Gartside, J.F. (2003). Congenital ocular abnormalities in calves associated with maternal hypovitaminosis A. *Veterinary Record*, 153, 213-214.
- Nagar, M., Quazi, J.A., & Sharma, S.K. (2015). Successful surgical management of bilateral corneo-conjunctival dermoid cyst in a crossbred calf – A case report. *International Journal of Science Environment and Technology*, 4, 938-943.
- O'Leary, L.M., Sebbag, L., Moody, L.M., Diehl, K. A., & Allbaugh, R.A. (2021). Acute corneal hydrops of presumed traumatic origin: An uncontrolled case series (three horses). *Equine Veterinary Education*, 34, 11-15.
- Oteyza, G.G.D., Bregliano, G., Sassot, I., Quintana, L, Rius, C., & Albisua, A.M.G. (2021). Primary surgical options for acute corneal hydrops: A review. *European Journal of Ophthalmology*, 32, 781-789.
- Pederson, S.L., Pizzirani, S., Andrew, S.E., Pate, D.O., Stine, J.M., & Michau, T.M. (2016). Use of a nictitating membrane flap for treatment of feline acute corneal hydrops-21 eyes. *Veterinary Ophthalmology*, 19, 61-68.
- Radostits, O.M., Gay, C.C., Blood, D.C., & Hinchcliff, R.W. (2000). *Veterinary Medicine*. 9<sup>th</sup> edn. W.B. Saunders, London, pp. 595, 599.
- Schlesener, B.N., Scott, E.M., & Vallone, L.V. (2018). An unusual case of feline acute corneal hydrops: Atypical disease presentation and possible *in vivo* detection of Descemet's membrane detachment in the cat's unaffected eye. *Veterinary Ophthalmology*, 21, 426-431.
- Yeruham, I., Perl, S., & Liberboim, M. (2002). Ocular dermoid in dairy cattle - 12 years survey. *Revue de Médecine Vétérinaire*, 153, 91-92.

