

Removal of grass awn from the stromal layer of cornea in a dog: A case report

A. Kumar^{1*}, K. Singh¹, A. Gopinathan¹, D. Bharti², M. Arya¹ and S. N. Chaithra¹

¹Division of Veterinary Surgery and Radiology, ICAR-Indian Veterinary Research Institute, Bareilly- 243 122, Uttar Pradesh, India; ²Division of Veterinary Medicine, G. B. Pant University of Agriculture and Technology, Pantnagar- 263 145, Uttarakhand, India

Abstract

Cornea is the outermost structure of the eye; it is devoid of blood supply and gets its oxygen directly from the environment; due to this, it is always exposed to external objects. Whenever any insult occurs in the eye, it is the cornea which always encounters the injury first. Young dogs, usually less than 5 years of age, those are more active encounter more corneal injury. In the present case study, 1.5 years old male Labrador dog got stuck in small bushes while playing outside, left eye cornea of the dog got injured by a small grass awn. Compete ophthalmic and physical examinations were performed, and a decision for surgical removal of foreign material was taken. After the successful removal of grass awn, antibiotic (tobramycin) and anti-inflammatory (flurbiprofen) drops were prescribed postoperatively; after 10 days of post-operative treatment, corneal scar tissue disappeared and cornea became clear on the 25th day post-operative.

Keywords: Cornea, Corneal scar, Endophthalmitis, Foreign body

Highlights

- Corneal foreign bodies are very painful condition.
- Require immediate attention.
- Removed grass awn successfully from the cornea of a dog.

Foreign body in the cornea is a kind of ophthalmic emergency which require immediate attention due to acute ocular pain (Osinchuk and Grahn, 2018). As cornea is the exposed portion of eye, it is always at risk of getting traumatized by foreign materials. In humans, the corneal foreign bodies are of industrial metallic origin, while in dogs, it is usually of plant origin (Gelston, 2013). Clinical signs and disease presentation of corneal foreign bodies are variable and mostly depend upon- type of foreign material, interval between trauma and presentation, degree of penetration in the cornea (Luo and Gardiner, 2010). Distinguishing corneal foreign bodies and foreign body tracts can be challenging, as blood or debris within the tract can mimic the presence of a foreign body. Extent of damage to cornea is influenced by size, shape and velocity of foreign bodies (Loporchio *et al.*, 2016). Sharp linear foreign bodies have more tendency to penetrate deeply into the cornea as compared to non-linear foreign bodies. Corneal anterior surface foreign bodies can cause both intraocular and corneal infections (Scott and Carter, 2014). Various studies suggest that infections associated with corneal foreign bodies are usually *Streptococcus* and *Staphylococcus* species. However, some *Bacillus* species and fungal hyphae were also reported in few studies (Sabaci *et al.*, 2002). Management of corneal foreign body ranges from medicinal to surgical depending on

the clinical presentation (Townsend, 2013). Foreign bodies embedded in the superficial layer of the cornea can be removed under topical anesthesia in cooperative patients while non-cooperative patients require chemical restraint (sedation, anesthesia), with microsurgical experience and magnification (Gelatt and Brooks, 2011).

A 1.5 years old male Labrador dog was presented in emergency in the Department of Veterinary Surgery and Radiology at TVCC cum RVP, IVRI, Bareilly (India). After recollection of information from owner, it was found out that dog was playing outside and accidentally got stuck in small bushes. On clinical examination, the patient was in extreme pain, unilateral epiphora (left) was present, and the traumatized eye also became sensitive to light. Upon ophthalmic examination, menace response, pupillary light reflex (PLR) and consensual reflex were positive. Direct ophthalmoscopic examination revealed normal fundus, retina and associated vessels, but a small sized straw colored grass awn was visualized embedded in the layers of the cornea of left eye (Fig. 1A). Foreign body was not penetrated through the layers of cornea.

Surgery was performed for the removal of foreign material under general anesthesia. Patient was pre anesthetised with atropine sulphate (0.04 mg/kg, S/C) and xylazine (1 mg/kg, IM). propofol (4 mg/kg, IV) was used for induction as well as maintenance anesthesia.

*Corresponding Author, E-mail: akshayvet1995@gmail.com

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Grass awn removal from cornea



Fig. 1. (A) Foreign body in corneal stroma, (B) Surgical removal of foreign body

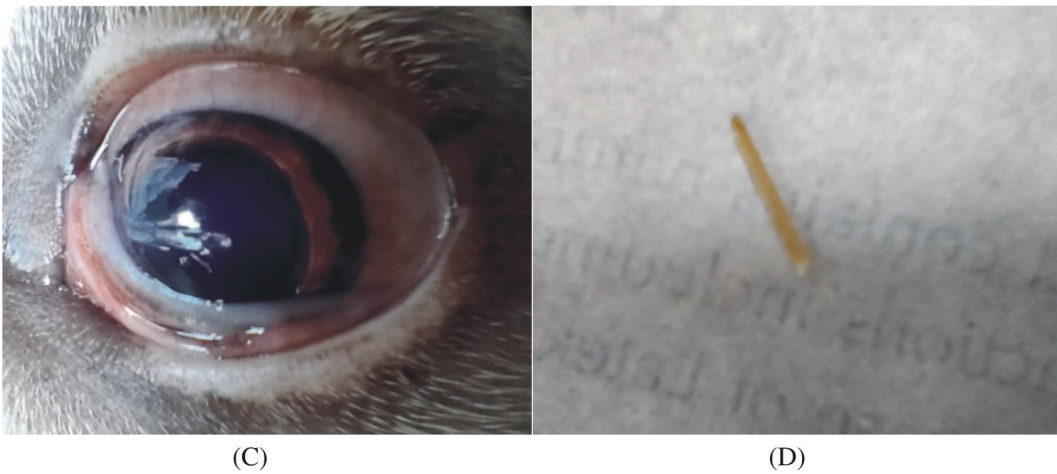


Fig. 2. (C) Corneal scar after removal of foreign body, (D) Retrieved grass awn from corneal stroma

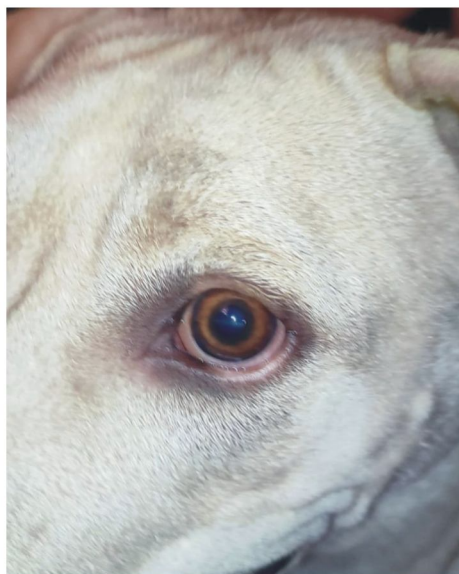


Fig. 3. Recovered cornea after 1 month of surgery

After induction, cornea was desensitized with the help of topical local anesthesia (0.5% proparacaine eye drops). Surgical site was aseptically prepared with the help of diluted povidone iodine solution in normal saline. Small superficial incision on cornea with the help of keratome was given just below the point of entry of foreign material, and grass awn was then grasped with Castroviejo tissue forceps (Fig. 1B) and retrieved gently (Fig. 2C & D). Postoperatively eye drops tobramycin and flurbiprofen were prescribed for one week. After 10 days, the patient was re-examined; small scar tissue was present along the tract of foreign body after removal, which was cleared after 30 days of post operative treatment and cornea became clear, and the ophthalmic parameters (menance response and PLR) were found normal with no sign of endophthalmitis (Fig. 3).

Cornea is the transparent outermost structure of the eye that remains in contact with environment. It is devoid of blood supply and obtain oxygen directly from the atmospheric air. It acts as a structural barrier of the eye that controls various infections (DelMonte and Kim, 2011). Transparency of cornea is maintained by precise organization of the collagen fibrils (Abass *et al.*, 2015). Trauma to the cornea due to foreign bodies results in similar response as produced by other tissues. Superficial epithelial damage heals fast, but insult deep to stromal penetration leads to loss of corneal transparency and infection to the internal structures (West *et al.*, 2015). Uveitis and endophthalmitis is the main complication usually encountered in full thickness penetration of

cornea with foreign body. Streptococcus, Staphylococcus and Bacillus species are usually present in ocular infection; sometimes, fungal hyphae are also present (Sabaci *et al.*, 2002). Few studies suggest that some foreign bodies damage lens also which result in cataract and glaucoma as well as retinal detachment in a long period of time. In rare cases, glaucoma and retinal detachment also develop and require enucleation. However, most cases can be managed with conservative medical treatment, and few cases require surgical removal of foreign bodies (Tetas *et al.*, 2016).

Cornea is the most exposed tissue of the eye. Therefore, it is highly susceptible to harm from foreign bodies and infection. Cornea may easily retain its clarity and be functionally active when timely management and removal of foreign body has been done; otherwise, haziness will occur in the corneal tissue.

Conflict of interest: Authors have no conflict of interest in this study.

Author's contribution: AK, KS, AG, DB: Conception and design; MA, CAK: Acquisition of data; KS, AK: Performed interpretation of results.

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