



ISSN Print: 2664-9926
 ISSN Online: 2664-9934
 NAAS Rating (2026): 4.82
 IJBS 2026; 8(7): 105-107
www.biologyjournal.net
 Received: 12-04-2026
 Accepted: 15-05-2026

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Iris prolapse in mare: A case report

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DOI: <https://www.doi.org/10.33545/26649926.2026.v8.i7b.936>

Abstract

Iris prolapse is a frequent complication of deep corneal injuries or ulcers, often leading to vision loss. An eight-year-old mare presented with left eye trauma was diagnosed for iris prolapse by visual examination and surgically repaired by rotational bulbar conjunctival graft under general anesthesia. This case report highlights the importance of prompt diagnosis and treatment of iris prolapse with appropriate graft selection in ensuring tectonic stability and functional recovery of the eye. Timely intervention is critical, as any delay greatly diminishes the chances of preserving the globe and, consequently, maintaining vision.

Keywords: Rotational bulbar conjunctival graft, iris prolapse, mare

Introduction

In equines, the lateral orientation of the eyeball, the relatively large globe, and pronounced corneal prominence predispose them to a higher incidence of corneal ulcers (Plummer, 2017) [5] as well as periocular and ocular disorders. Corneal injuries are often slow to heal and may progress to complications such as ulceration, descemetocoele, and iris prolapse. Superficial corneal damage involves the anterior one-third of the stroma and generally responds to intensive medical therapy (Cutler, 2004) [2]. In contrast, complex deep injuries extend beyond the anterior one-third of the stroma frequently resulting in descemetocoele formation and iris prolapse which necessitate immediate surgical intervention (Chmielewski *et al.*, 1997) [1].

In Iris prolapse, full corneal thickness loss results in protusion of a dark brown to black iris tissue through the corneal defect. It may arise secondary to trauma or infections of bacterial, fungal (e.g., *Aspergillus*, *Fusarium*), or viral origin (Flores *et al.*, 2020) [3]. While diagnosis can often be made through direct visual inspection of the eye, a comprehensive assessment of the cornea, anterior chamber, lens, and posterior chamber, along with evaluation of vision, is essential to exclude other ocular pathologies. Supportive medical therapy alone is insufficient in iris prolapse. Immediate surgical intervention should be instituted using a conjunctival or corneal graft to cover the defect, protect the globe, and reduce infection risk.

Material and Methods

An eight-year-old mare, weighing 500 kgs was presented with a 14-day history of trauma to the left eye. Clinical examination revealed mucoid ocular discharge accompanied by blepharospasm and photophobia. A central corneal defect measuring approximately 3 mm was identified, through which the brown iris had prolapsed (Fig 1). Opacity was observed around the lesion and along the ventral cornea, whereas neovascularization was evident dorsally. The menace response was intact in both eyes, and episcleral congestion was noted in the affected eye. As per Stoppini & Gilger, (2016) [6], the eye was evaluated physically by looking for corneal opacity, menace response, and type of neovascularization.

To achieve tectonic preservation and restore vision, emergency surgery was carried out under general anesthesia. Anaesthetic induction was performed using intravenous xylazine at 1 mg/kg body weight and ketamine at 5 mg/kg body weight, with maintenance provided by 2.5% isoflurane. The left eyelids were disinfected with povidone-iodine, and the eye was thoroughly irrigated with normal saline. Prior to draping, a few drops of topical gatifloxacin (0.5%) were instilled. The prolapsed iris was carefully debrided with sterile cotton, and the margins of the corneal ulcer were cleared. The remaining viable iris tissue was repositioned into the anterior chamber (Fig 2). A 4 × 8 mm section of bulbar conjunctiva was harvested parallel to the dorsal limbus to create a rotational conjunctival graft, which was sutured to the corneal defect using PDS 4-0 in a simple interrupted pattern (Fig 3).

Tarsorrhaphy was then performed with nylon in a horizontal mattress technique, leaving a small medial opening for drug administration.

Postoperatively, the mare was administered systemic antibiotics (Ampicillin and Cloxacillin @ 10-50 mg/kg), twice a day for five days and analgesics (meloxicam @ 0.2-0.5 mg/kg) once a day for three days, intravenously. Gatifloxacin was administered topically at 2 drops three times a day for 14 days. Furthermore, topical gatifloxacin with prednisolone (two drops, three times a day) was advised to continue for two more weeks. The tarsorrhaphy sutures were removed after two weeks.



Fig 1: Staphyloma on central cornea



Fig 2: Debrided corneal defect and repositioned iris



Fig 3: Rotational Conjunctival graft sutured over the corneal defect



Fig 4: Severe corneal opacity throughout the cornea at 6 weeks after surgery

Results and Discussion

Fourteen days after surgery, evaluation of the left eye revealed an intact graft, moderate corneal opacification surrounding the graft with associated neovascularization, and absence of episcleral congestion. At 6 weeks, the conjunctival graft successfully covered and healed the corneal defect, thereby preserving the globe. Severe corneal opacity developed; however, the owner reported partial peripheral vision (Fig 4). Given the chronicity of the injury, delayed treatment could have resulted in phthisis bulbi, endophthalmitis, and eventual globe rupture. While conjunctival pedicle grafts are commonly used in horses to provide structural support and supply blood vessels to an avascular cornea, the remaining graft tissue causes permanent corneal opacity that can impair vision. All biomaterials compromise optical clarity, letting the cornea heal through medical treatment alone when feasible results in significantly less scarring. (Lores *et al.* 2020) [4]. In this mare, a rotational bulbar pedicle graft was employed since the defect was centrally located and measured 3 mm in diameter. Chmielewski *et al.* 1997 [1] discussed that full-thickness corneal lacerations exceeding 15 mm that involve or extend past the limbus carry a high risk of poor visual recovery and surgical eye removal (enucleation). So, in present case scenario, there were better chances of partial vision recovery. Several surgical techniques are available for managing iris prolapse, including direct corneal suturing, conjunctival flaps and grafts, and both full-thickness and partial-thickness keratoplasty. Different conjunctival graft types such as rotational bulbar pedicle, hood, island, bridge, 360° complete, and tarsopalpebral grafts each present distinct advantages and limitations. The graft must not only cover the prolapsed area but also adhere to the corneal epithelial cells; otherwise, epithelial migration beneath the graft may delay healing and lead to graft failure. A 360° bulbar conjunctival graft, for instance, impairs vision, complicates ocular response assessment, carries a high risk of failure, causes extensive damage to the bulbar conjunctiva, and reduces drug delivery. Hood and 180° grafts share similar drawbacks but to a lesser extent. Bridge grafts resemble pedicle grafts, except they are anchored at both ends of the eye rather than a single attachment point (Plummer, 2017) [5]. There are advantages and disadvantages of different techniques for correction of staphyloma, so the decision of technique depends on the location of the corneal tear, size of laceration and severity of lesion, most importantly, the surgeon's experience and choice.

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