Surgical removal of a luxated lens in a common buzzard (**Buteo buteo**)

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**SUMMARY**

The aim of this study were to report a case of unilateral spontaneous anterior lens luxation associated with retinal detachment and surgical removal in a common buzzard. An adult common buzzard (**Buteo buteo**) of unknown sex, free-fly was found unable to fly on a pasture during the day. In the left eye the lens was luxated into the anterior chamber. The luxated lens was removed from the anterior chamber by an irrigation/aspiration technique after corneal incision. During the follow-up period of 3 weeks no signs of glaucoma or any other complications was detected. This is the first case of spontaneous anterior lens dislocation and surgical removal in a common buzzard reported in the literature. It shows that a careful clinical examination can identify lesions which have been considered as rare in this wild bird so far.

**Keywords**: Ophthalmology, lens dislocation, irrigation-aspiration, humor aqueous, cytology, buzzard

**Introduction**

Lens dislocation is a painful and blinding ocular condition, in which the lens is displaced, usually into the anterior chamber [5, 8]. Luxation of the lens may be primary and develops from an inherited zonular degeneration, or secondary and results from the zonular rupture that occurs secondarily to diseases such as the chronic glaucoma, uveitis, and trauma [4, 6, 23].

The aim of this study was to report a case of unilateral spontaneous complete anterior lens dislocation associated with retinal detachment in a common buzzard (**Buteo buteo**) that was successfully treated by surgical intervention. As far as we know, this is the first report of unilateral spontaneous anterior lens dislocation and surgical intervention in a common buzzard.

**Case Report**

An adult of unknown sex free-fly common buzzard (**Buteo buteo**) was found unable to fly on a pasture during the day. On ophthalmological examination, the eyes were seen to be asymmetrical; the left eye being larger than the right. There were extensive periorbital and lid ecchymoses along with conjunctival chemosis on the left side. In this eye, the pupil was dilated and there was no pupillary light reflex; no reaction to light. Transparency of the lens was normal. No relative afferent pupillary defect was found and ocular motility was normal. In the left eye the lens was luxated into the anterior chamber (Fig. 1). The examination of the right eye was normal. The animal had no other systemic disorders. Findings from physical examination, complete blood cell count, serum biochemical profile, and urinalysis revealed no additional abnormalities.

**Figure 1**: The luxated lens into the left anterior chamber
Indirect ophtalmoscopy was performed; abnormalities in left eye were limited to those shown in figure 1. The ophthalmological examination of the left eye showed loss of iris bombe. There was a slight hyphema on the lateral side of the iris. The Schirmer tear test values (Schirmer Tranentest, Eickemeyer Vet, Tuttingen, Germany) were 15 mm and 18 mm per min for the right and left eye, respectively. Right and left intraocular pressure (IOP), measured by Schiotz tonometry, were 15 and 16 mmHg, respectively. Two-D ultrasonography of the left eye showed retinal detachment (Fig. 2).

Collection of a 0.15–0.2 ml aqueous humor sample was carried out with 25G needle. Cytospin smears were prepared as previously described [9]. The cytospin technique was used to maximise the yield of cells from anterior chamber. In cytopathologic examination, a portion of the specimen collected from eye was cytocentrifuged at 1500 rpm for 15 minutes and the cytocentrifugation smears (Cytospint; Shandon Southern Ltd., Cheshire, England) prepared was then stained with Papanicolaou (PAP). Additionally, the other portion of the cytologic material used for a bacteriological analysis. The type of cells commonly encountered from anterior chamber; numerous erythrocytes and few macrophages (Fig. 3). Cultures of aqueous humor were found negative in this case. The cause of lens luxation might be blunt eye trauma.

The luxated lens was treated by irrigation/aspiration technique after general anesthesia induced by intramuscular administration of xylazine HCl (Alfaxyme, Ege Vet Ltd. Şti. Izmir, Turkey) and ketamine HCl (Alfamine, Ege Vet Ltd. Şti. Izmir, Turkey) (Fig. 4). Local anaesthesia was achieved by topical administration of 0.5% paraprocaine hydrochloride (Alcaine, Alcon-Couvreur, Puurs, Belgium). A 2-3 mm limbal incision was done with a corneal knife at the lateral canthus. Healon (Appavisc HV PFS; Appasamy Ocular Devices Pvt. Ltd., Pondicherry, India) was injected into the anterior chamber to create space between the posterior lens capsule and iris. The anterior capsule was incised with a stiletto knife. Lens aspiration using a 22G Simcoe irrigation/aspiration cannula was initiated. Gentle aspiration at a low irrigation rate was initiated slowly to remove the soft lens material with a transverse planar motion of the cannula tip. Total lens removal was done successfully (Fig. 5). The corneal incision was sutured with 10/0 monofilament polyamide 66 (Daylon, Dogaşan Ltd. Şti., Trabzon-Turkey) using 3 simple separated sutures.
Topical 0.1% dexamethasone (Onadron, IE Uлага Ltd. Şti., Istanbul-Turkey) was used to suppress the anterior uveitis that develops secondary to the lens movement within the globe. We also treated the eye topically with 0.005% latanaprost (Xalatan, Pfizer Ltd. Şti., Istanbul-Turkey). Additionally, gentamicine sulphate (Gentavet, Vetaş Ltd. Şti., Istanbul-Turkey) was administered topically during 5 days. Surgery of the left eye was successful. During the follow-up period of 3 weeks we did not observe glaucoma or any other complications.

Discussion

Lens luxation has been reported in dogs, laboratory animals, diurnal and nocturnal raptor species [2, 10, 19-22], but not in diurnal raptors. To our knowledge, this is the first report of unilateral spontaneous anterior lens dislocation and surgical intervention in a common buzzard (Buteo buteo).

Lens luxation may be primary when it develops from an inherited zonular degeneration, or secondary when it results from chronic glaucoma with buphtalmos, uveitis, and hypermature or intumescent cataracts. Congenital lens luxation may be associated with multiple ocular anomalies, including zonular aplasia, microphakia, and congenital glaucoma [5, 8]. Lens dislocation is a rare complication of head injuries. The extensive periorbital and lid ecchymoses on left side of the present case, suggest that the lens dislocation was presumably due to ocular blunt trauma. As lens displacement may lead to serious complications such as pupillary block glaucoma, prompt referral to a qualified veterinarian is therefore warranted [11, 12, 15, 23].

In clinical ophthalmology, bacteriology and cytology the most commonly required technique for analysis of aqueous humor samples [7]. Cytology of the aqueous humor can confirmed the diagnosis of many intraocular conditions [13]. In this case; the cytology of the aqueous revealed post-traumatic hyphema and anterior uvea inflammation, as suggested by the several foamy macrophages and the numerous red blood cells. No bacterial microorganism were observed. The cytologic findings supported the diagnosis of lens luxation secondary to blunt trauma.

The initial clinical manifestations of lens displacement are subtle and include mild conjunctival hyperemia, vitreous degeneration, and vitreous prolapse into the anterior chamber, iridodonesis, and decreased or increased anterior chamber depth that develops secondary to the movement of the subluxated lens [6]. Complete lens luxation into the anterior chamber or vitreous cavity, secondary glaucoma, buphtalmos, and retinal and optic nerve degeneration are common manifestations of chronic lens luxation. The vitreous degeneration usually develops secondary to the lens motion during luxation, and if the vitreous liquefies, it often presents through the pupil and into the anterior chamber [8]. In this case, lens dislocation was combined with anatomic abnormalities and poor preoperative visual acuity, including vitreous liquification, traumatic hyphema, and ocular inflammation.

Ophtalmoscopic examination is inexpensive and gives precise information regarding partial luxation (subluxation) as opposed to complete luxation (dislocation) of the lens [18]. In this case, the iris was concave where the lens posterior surface was in contact with it. There was a slight hyphema on the lateral side of the iris.

Ultrasonography used to evaluate the posterior segment is an important presurgical screening tool [17, 22]. If the view is obscured by intraocular bleeding, an ultrasound examination should be performed to determine the location of the lens [18]. Ultrasonography revealed hypechoic areas in the posterior segment and, due to the moveable nature of the opacities, they were proposed to represent vitreous degeneration. The diagnosis of vitreous degeneration was confirmed by surgery and no remnants of the hyoloid artery or primary vitreous were seen.

The mechanism of glaucoma associated with a dislocated lens are pupillary block, degenerative lens changes, and contaminant anterior chamber angle damages [1, 14]. It is reported that three types of pupillary block glaucoma induced from lens dislocation. These include pupillary block by the subluxation of the lens posterior to the iris, lens incarceration directly within the pupil, and complete lens dislocation into the anterior chamber [1, 14, 16]. In the present case, lens dislocation was complete into the anterior chamber. In the current case, the luxated lens did not appear to be the primary factor blocking the current flow of aqueous humor, because IOP was not increased. This is likely because the bird was rapidly brought to the clinic after the trauma. Latanaprost induced miosis, increases uveal-scleral aqueous humor outflow, and reduces the intraocular pressure (8). We treated left eye topically with 0.005% latanoprost in the postoperative period.

If the lens is displaced into the anterior chamber, it may be possible to relieve the condition by dilating the pupil and allowing the lens to reposition into the posterior segment. However with a totally dislocated lens into the anterior chamber, it is better to constrict the pupil and surgically remove it. In human patients, Choi et al. [3] have treated anteriorly dislocated lens by lensectomy, vitrectomy, phacoemulsification, and ab externo scleral IOL fixation. For scleral fixation in human eyes, Young et al. [24] used a scleral tunnel to relieve IOL fluctuation and to maintain anterior chamber depth. In small animals, acute primary lens luxation is usually treated with prompt intracapsular lens extraction, coupled with appropriate topical medication to control inflammation and secondary glaucoma [4-6, 8, 23]. In the present case, the totally dislocated lens to the anterior chamber was removed by irrigation/aspiration technique, combined with ab interno scleral fixation. Surgery was successful in the treated eye.
This is the first case of spontaneous anterior lens dislocation and surgical intervention in a common buzzard reported in the literature. It shows that careful clinical examination is advised for identification of rare lesions in wild animals.

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References


