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Surgical management of acute traumatic proptosis in a pug: A case report

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Abstract

A 4 year old male pug dog was presented to Veterinary Clinical Complex, LUVAS, Hisar with the history of protruded left eye globe out of the orbital rim after infight with another dog. Ocular examination revealed proptosis of left eye ball with presence of Direct and indirect pupillary light reflex but menace response was absent. The dog was first stabilised and proptosis was surgically managed with lateral canthotomy followed by temporary tarsorrhaphy under general anaesthesia. Systemic as well as topical antibiotic and parental NSAID were advised post-operatively. On re-evaluation of this case strabismus was found to be complication of traumatic proptosis.

Keywords: Pug, proptosis, lateral canthotomy, strabismus

Introduction

A 4 year old male pug dog was presented to Veterinary Clinical Complex, LUVAS, Hisar with the history of protruded left eye globe out of the orbital rim after infight with another dog. Ocular examination revealed proptosis of left eye ball with presence of direct and indirect pupillary light reflex but menace response was absent. The dog was first stabilised and proptosis was surgically managed with lateral canthotomy followed by temporary tarsorrhaphy under general anaesthesia. Systemic as well as topical antibiotic and parental NSAID were advised post-operatively. On re-evaluation of this case strabismus was found to be complication of traumatic proptosis.

Proptosis is an emergency ophthalmic condition characterized by partial or complete rostral displacement of the eye globe with respect to the corresponding orbit (Wheler *et al.*, 2001)^[8]. Proptosis may develop from blunt head trauma such as an automobile accident or fight with another animal. Small breed dogs especially brachycephalic breeds are on high risk for proptosis because of their prominent eye globes, shallow orbit and large palpebral fissure (Wheler *et al.*, 2001 and Miller, 2008)^[8, 6]. Early action is needed to prevent permanent damage to eye ball via globe replacement surgery as proptosis leads to entrapment of the corresponding eyelids behind the globe (Wheler *et al.*, 2001; Crispin, 2005)^[8, 2] which results in swollen periorbital tissues that potentially reduce the vitality of the globe and possibly cause loss of vision (Crispin, 2005)^[2]. Possible complications associated with proptosis included permanent strabismus, congestive glaucoma, avulsion of optic nerve, ulcerative keratitis, keratoconjunctivitis sicca, neuroretinal degeneration, lateral exotropia and phthisis bulbus (Wheler *et al.*, 2001; Mandell and Holt, 2005; Ali *et al.*, 2019)^[8, 5, 1]. It is often preferable to try to salvage the globe rather than to remove it at its initial presentation (Miller, 2008)^[1]. So, the present case discusses about surgical technique used for the treatment of proptosis in a brachycephalic dog and its complication.

A 4 year old male pug dog was presented to VCC, LUVAS, Hisar with the history of protruded left eye globe after infight with another dog. On clinical examination there was complete protrusion of left eye globe; conjunctiva and periorbital tissue were hyperemic and swollen (fig.1A). Cornea was dry with shallow corneal ulcer, menace response was absent and direct and consensual pupillary light reflex was present. Lateral strabismus was also present on initial presentation of patient (fig.1B). Immediate surgical intervention was done to replace the protruded eye globe into orbital cavity. Dog was premedicated with atropine sulphate and butorphenol @0.04 mg/kg and @0.2 mg/kg body weight respectively. Induction was done with propofol @ 4mg/kg body weight and general anaesthesia was maintained on isoflurane. Periorbital tissue and eye globe were flushed with diluted (1:50) povidone iodine solution. Severe periorbital edema and swelling was present due to globe entrapment in front of

palpebral fissure, so it was difficult to replace eye globe by conservative method of using stay sutures. Lateral canthotomy was performed, globe was then easily replaced (fig.1C) and wound was sutured with vicryl 3-0. Temporary tarsorrhaphy was also done to keep the eye ball within orbit and to protect the eye globe against any external trauma and enough space was left for introduction of topical eye medicines (fig.1D). Systemic course of cefotaxime @25 mg/kg and melonex @0.2 mg/kg were prescribed for 5 and 3 days respectively. Owner was advised to instill ciprofloxacin and carboxymethyl cellulose eye drops five times a day for 7 days and use of E-collar. Lateral canthotomy sutures and temporary tarsorrhaphy sutures were removed after 1 and 2 weeks of surgery respectively.

Traumatic proptosis in dogs is an emergency that require an immediate surgical intervention to save the vision and to prevent further damage to proptosed globe. Most ocular emergencies involve loss of vision, compromised globe integrity, proptosis or severe ocular pain. Delay in treating true emergencies may result in a blind eye or loss of an eye (Mandell and Holt, 2005) [5]. Proptosis is predominately seen in brachycephalic breed due to an anatomically shallow orbit with wide eyelid margins that may be increasing the incidence of proptosis even with minimal trauma (Mandell, 2000) [4]. In present case also, a brachycephalic breed i.e pug was presented with the proptosed left eye after a fight with other animal. The prognosis is favourable for patients who have positive direct or consensual pupillary light reflex, normal findings on posterior segment examination. Prognosis is

unfavourable in a nonbrachycephalic dog, proptosis in cats, hyphema, no visible pupil, facial fractures, optic nerve damage, and avulsion of three or more extraocular muscles (Gilger *et al*, 1995) [3]. Testing of direct and indirect pupillary light reflex is a simple and significant prognostic indicator (Pe'er *et al.*, 2019) [7]. In present case pupillary light reflex was present but menace response was absent; absence of menace response might be due to entrapment of eye lids behind the globe. Presence of direct and consensual pupillary light reflex in partial proptosed eye is generally a good prognostic sign and yet its absence at initial examination cannot be considered poor prognostic indicator (Mandell and Holt, 2005) [5]. The two options for a proptosed eye are enucleation or replacement with tarsorrhaphy depending on the viability of the extraocular tissues and eye (Mandell, 2000) [4]. Lateral canthotomy and temporary tarsorrhaphy following reduction of the globe were performed for current case. Enucleation should be considered in the severely damaged globe (Miller, 2008) [6]. Management of proptosed eye and clinically late presented proptosed cases could result into keratitis, keratoconjunctivitis sicca, corneal ulcer and glaucoma (Ali *et al.*, 2019) [1]. The rupture of the extraocular muscles was reported as a common complication resulting in long-term strabismus (Mandell and Holt, 2005) [5]. Similar finding was also recorded in present case also, where rupture of medial rectus muscle leads to lateral strabismus. The animal had vision as well as cosmetically accepted eye. Early medical/surgical intervention (globe replacement) plays a major role for favourable disease prognosis.

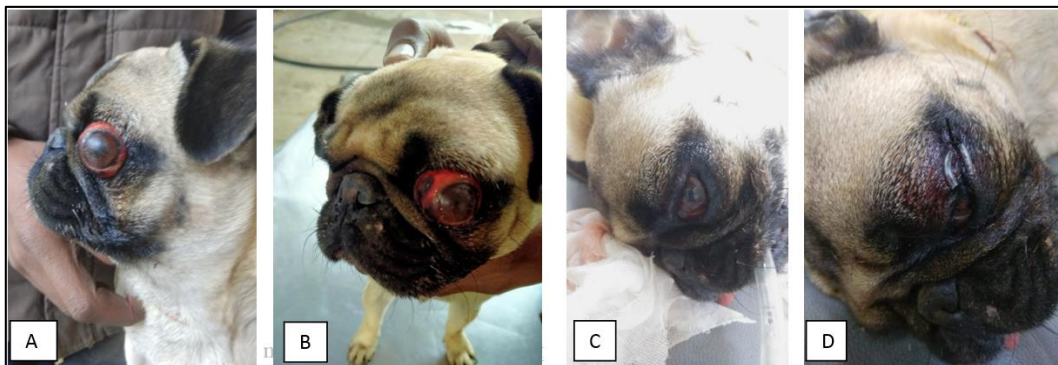


Fig 1: (A) Image showing Proptosed left eye ball with dry cornea and periorbital swelling; (B) note the lateral strabismus of eye ball, Caused by avulsion of medial rectus muscle; (C) globe replacement into orbit by lateral canthotomy (D) followed by Temporary Tarsorrhaphy.

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