Introduction

Dog bites result in diverse injuries & complications in the periocular region.

Nearly 3/4 of victims are younger than 9 years old. Males are bitten more frequently than females, with a ratio of 1.4:1. Most pediatric bites occur during seemingly positive self-initiated interactions – such as petting or hugging – with a recumbent dog in an indoor setting.

Dogs have an instinctual predilection for the face, specifically the ‘central target area,’ which includes the lips, nose, and cheeks. With small bodies, comparatively large heads, and undeveloped motor skills, children are also more vulnerable to facial injuries.

50 – 80% of bite injuries in children involve the head and neck. This translates into 44,000 pediatric facial injuries annually in the US.

Ocular & periorbital structures are involved in 4 – 17% of cases. Commonly injured structures include the canaliculi, facial nerve, levator, lacrimal gland, rectus muscles, and trochlea. Injuries to the bony orbit & globe are more unusual, but a high index of suspicion must be maintained in younger children.

We provide 3 representative cases and discuss specific considerations related to common patterns of ophthalmic injury.

Methods

Review of clinical literature and experience from 1976 to 2014. Representative cases are presented to illustrate important management considerations.

Results

Case 1. 7-year-old boy complained of right eye pain after attack by a neighbor’s dog. Visual acuity was reduced to count fingers. He had multiple cheek lacerations involving the underlying mimetic muscles. Ocular exam disclosed subconjunctival hemorrhage and a corneoscleral laceration. The anterior chamber was shallow with a hyphema. Computed tomography confirmed a ruptured globe. Vision returned to 20/40 after surgical repair.

Case 2. An 18-month-old girl was attacked by the family dog. She presented with lacerations to the nasal bridge, cheek, and left medial eyelid. The inferior canaliculus had been transected. A monocanalicular stent was placed during repair, and she recovered well with no residual epiphora.

Case 3. A 21-year-old female presented with complete avulsion of the right lower lid and punctum following a dog bite. Reconstruction was accomplished with a Hughes tarsoconjunctival flap, periosteal flap, cheek advancement, canaliculoplasty, and silicone intubation. She recovered well without epiphora or residual lagophthalmos.

Conclusions

Fortunately, the blink reflex typically protects the globe, which is retropulsed into the orbit and spared from direct trauma. Nevertheless, canine bites can result in ruptured globe injuries and it is necessary to maintain a high index of suspicion in young children, particularly those who cannot reliably report visual symptoms.

The canalicular system is frequently damaged by dog bites, and the overlying soft tissue is often minimally traumatized; wounds often self-seal with fibrin, or the overlying skin can remain intact during shear injury. Careful exploration and prompt repair is necessary to minimize long-term sequelae. Silicone monocanalicular, bicanalicular, and ‘doughnut’ stents are all effective.

Avulsions and complex lacerations to the eyelids often require complex multi-lamellar reconstructive strategies, but should not be employed until it is clear that the relevant tissues are viable and free of infection.

Other ophthalmic and orbital injuries – such as those to the levator, rectus muscles and trochlea – also require careful ruling out.

References