

Persistent Hypotony Following Repair of Traumatic 360 Degree Giant Retinal Tear

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Abstract

Background: About 13 - 30% of Giant Retinal Tears (GRT) are associated with trauma which may also have damaged the mechanisms maintaining Intra Ocular Pressure (IOP).

Case Presentation: A 27 year old woman presented with visual loss in her left eye following blunt injury. Upon initiation of surgical repair it was discovered that there was a 360 degree GRT. The retina was successfully reattached. Visual acuity improved to 20/200. The retina remained attached throughout the 4 years follow-up. However, the eye always remained hypotonic and had to be kept filled with silicon oil.

Conclusion: This case report demonstrates that eyes with traumatic GRTs may have persistent hypotony despite successful repair of retinal detachment.

Keywords: *Giant Retinal Tear; Retinal Detachment; Trauma; Hypotony*

Background

Giant retinal tears (GRT) are defined as retinal breaks extending circumferentially for more than 90 degrees [1]. Most GRTs are idiopathic but about 13 - 30% are associated with trauma [1-10]. We report a case of 360 degree GRT following blunt trauma that had persistent hypotony despite successful anatomical repair.

Case Presentation

A 27 year old woman presented with visual loss in her left eye after being assaulted and punched in the eye. There was periorbital hematoma around the left eye. Perception of rays was defective. The eye was very soft; intra ocular pressure recorded was 6 mmHg. Pupils were dilated and non-reacting. Cornea was clear, lens was slightly cataractous. Red glow was absent and not much could be perceived on indirect ophthalmoscopy except for an anterior grey reflex. X-rays did not reveal any fracture of the margins or walls of the orbit. B-Scan suggested high reflectivity mass of tissue nasally with a membranous configuration. There was no evidence of globe rupture. Institutional Review Board (IRB)/Ethics Committee approval was obtained.

Reformation of the vitreous cavity with saline and initial vitrectomy revealed 180 degree of bare Retinal Pigment Epithelium (RPE); it seemed to be a huge GRT with half the retina folded onto itself. But when it was attempted to unfold the retina it was discovered that the other half was also discontinuous with the vitreous base, that it was in fact a 360 degrees GRT. Furthermore, the two halves of the retina were adhered to each other and had to be separated from each other with instruments at hand. Perfluorocarbon liquid (PFCL) was injected and the rest of the surgery which included lensectomy proceeded routinely/was straightforward. Post-operatively she regained a visual acuity of 20/200 but aqueous production was not restored probably due to ciliary body trauma and the eye was always hypotonic. 5000 centistokes (cSt) Silicon oil exchange was done one year postoperative. She continues to maintain the same status after almost 3 years of follow up.

Discussion and Conclusion

Ocular trauma is the most prevalent cause of unilateral blindness, eighteen million people are affected worldwide [11-13]. Blunt injuries are commoner than penetrating [14]. Most injuries occur during sports, road accidents, industrial work and physical assault [14-17]. Ocular contusion can cause various types of retinal breaks like retinal dialysis, horseshoe tear, operculated hole, macular hole and giant retinal tear [18]. They are formed either due to direct injury at the site of impact or indirectly as a result of changes in the shape of the eye

(anteroposterior shortening followed by equatorial elongation) that may cause retinal tears at the vitreous base region immediately or secondarily following premature vitreous detachment [19]. About 85% of traumatic retinal tears develop rhegmatogenous retinal detachment [20] dialyses and giant tears account for 69% of these [21] (and are commoner in myopics [3,22]). Approximately 20% of all GRTs are post-traumatic [1,3,4] the incidence varies from 13% to 30% in the larger case series published in the literature. The progression to detachment is immediate or much more rapid with giant retinal tears [22].

360 degree giant retinal tear has been reported in a 4 month old girl as a result of presumed non-accidental injury [23]. Inflicted injuries are much more commonly seen in children [14]. In them the brain injury is often of greater functional significance for vision than the eye injury [24,25]. Other ocular features include retinal haemorrhage, choroidal rupture, vitreous haemorrhage, perimacular retinal folds, angle recession & disc swelling [14].

Hypotony following blunt ocular trauma is well documented [26,27] but the exact pathogenesis is not clear. It could be transient perhaps as a result of neurovascular dysfunction or ciliary epithelial edema, or persistent possibly because of ciliary body injury, ischemia, cyclodialysis or anterior PVR [28-30]. Keeping the eye filled with silicone oil permanently may be required in some cases of chronic hypotony despite anatomic repair of traumatic retinal detachment to prevent phthisis [31].

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