

## Visual Recovery Following Emergent Orbital Decompression in Traumatic Retrobulbar Haemorrhage

Kelvin YC Lee,<sup>1</sup>MBBS, MRCS (Edin), MMed (Ophth), Sharon Tow,<sup>1</sup>MBBS, FRCS (Edin),  
Kee-Siew Fong,<sup>1</sup>FRCS (Edin), FRCOphth, MMed (Ophth)

### Abstract

**Introduction:** Acute retrobulbar haemorrhage is a potentially sight-threatening condition, and can follow retrobulbar anaesthesia or trauma to the orbit. Acute loss of vision can occur with retrobulbar haemorrhage and is reversible if the condition is recognised and treated early. **Clinical Picture:** We report a case of acute retrobulbar haemorrhage following orbital trauma in a 78-year-old Chinese lady. **Treatment:** The patient was on follow-up for a mature cataract in the right eye and had been scheduled for cataract surgery. The patient presented to the emergency department with acute loss of vision in the right eye, severe proptosis and tense periorbital haematoma after she hit her right face following a fall. Computed tomography scans revealed fractures of the floor, lateral and medial walls of the right orbit as well as retrobulbar and periorbital haematoma. There was marked proptosis and tenting of the globe with stretching of the optic nerve. Emergent lateral canthotomy and cantholysis was performed at the emergency department. The patient subsequently underwent surgical evacuation of the orbital haematoma. **Outcome:** The patient's vision in the right eye recovered from no perception of light to light perception over the next few days. After a month of follow-up, the patient underwent right cataract surgery, and her best corrected visual acuity was 6/12 part. **Conclusion:** In severe acute retrobulbar haemorrhage, prompt surgical evacuation of the haematoma can reverse visual loss.

Ann Acad Med Singapore 2006;35:831-2

**Key words:** Orbital fracture, Proptosis, Surgical decompression

### Introduction

Acute retrobulbar haemorrhage is a potentially sight-threatening condition that can occur spontaneously or following retrobulbar injections and trauma to the orbit.<sup>1,2</sup> Visual loss results from central retinal artery occlusion or optic neuropathy from direct compression or from compression of optic nerve venous drainage.<sup>3-6</sup> Prompt therapeutic intervention may restore good visual function. We report a patient with acute retrobulbar haemorrhage and visual loss that achieved good visual function following emergent orbital decompression.

### Case Report

A 78-year-old Chinese female presented to the emergency department with right periorbital pain, swelling and loss of vision in the right eye following a fall an hour earlier when the right side of her face hit a metal rail. She had a history of end-stage renal failure, and had undergone heparinised

haemodialysis just prior to the trauma. She had been awaiting cataract surgery for a dense perception-of-light cataract on the right eye.

Examination revealed no light perception (NLP) and 6/18 vision in the right eye (RE) and left eye (LE) respectively. The RE showed severe proptosis, periorbital haematoma, complete ptosis, diffuse subconjunctival haemorrhage with chemosis, reduced extraocular movements, a grade 3 relative afferent pupillary defect (RAPD) and marked resistance to retropulsion (Fig. 1). A dense cataract precluded any view of the fundus. LE examination revealed a senile cataract but was otherwise normal. The diagnosis of acute traumatic retrobulbar haemorrhage with optic neuropathy was made and an emergent lateral canthotomy with inferior cantholysis was performed in the emergency department. Intravenous acetazolamide 500 mg was administered and gutt timolol 0.5% bd was commenced for the RE. However, RE vision remained at NLP. Computed tomography (CT) scan of the

<sup>1</sup> Singapore National Eye Centre, Singapore

Address for Reprints: Dr Kelvin Lee, Singapore National Eye Centre, 11 Third Hospital Avenue, Singapore 168751.

Email: kelvin.lee.y.c@singhealth.com.sg



Fig. 1. Right traumatic acute retrobulbar haemorrhage with severe proptosis, tense orbit, restricted extraocular motility, dense subconjunctival haemorrhage, acute loss of vision and grade 3 relative afferent pupillary defect.

orbits showed fractures involving the floor, lateral and medial walls of the right orbit, and the anterior and lateral walls of the right maxillary sinus. Right peri- and retro-orbital haematomas with tenting of the globe by the stretched optic nerve (Fig. 2) was noted.

Surgical evacuation of the right orbital haematoma was then performed 6 hours after presentation. Postoperative RE vision was light perception with persistence of a RAPD. RE intraocular pressure was normal and B-scan ultrasound showed no vitreo-retinal abnormality. Once the right proptosis and ocular motility improved, she underwent an uneventful right phacoemulsification with posterior intraocular lens implantation 4 weeks following orbital surgery. Postoperative best-corrected visual acuity was 6/12, N6. Fundus examination showed mild right optic atrophy with a normal retina. Goldman visual field examination of the right eye showed a constricted visual field.

### Discussion

Visual loss in our patient was most likely due to a combination of compression and stretching of the optic nerve secondary to the intraorbital haematoma. Increased susceptibility to bleeding was present as she had undergone heparinised haemodialysis just prior to the injury.<sup>7</sup> In vision threatening acute severe retrobulbar haemorrhage, there is a need to intervene urgently. Emergent lateral canthotomy with inferior cantholysis has been recommended as first-line treatment, particularly if visual loss from optic neuropathy is present. It is a safe and effective procedure that decreases intraorbital pressure by increasing orbital volume, and may result in prompt reversal of visual loss.<sup>4,6</sup> Although medical decompression was ineffective in our patient, it may be considered as an adjunct to surgical decompression. A high-resolution CT scan or magnetic resonance imaging of the orbits is helpful in detecting and localising any intraorbital haematoma present. If vision does not improve following lateral canthotomy and inferior cantholysis, surgical evacuation of intraorbital haematoma can lead to visual improvement.

In our patient, there was severe tenting of the globe which indicates extreme proptosis such that lateral canthotomy

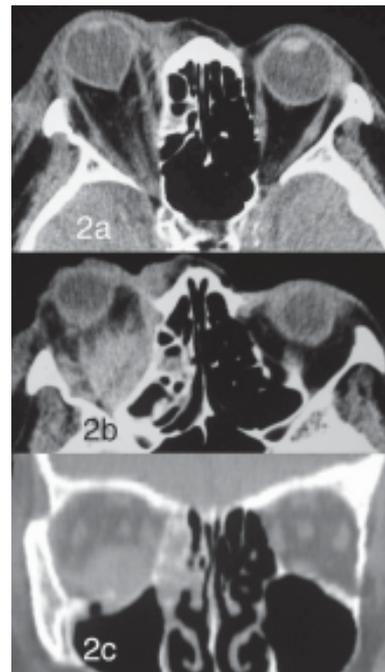


Fig. 2. 2a – Axial computed tomographic (CT) scans showing marked proptosis, with tenting of the globe by the stretched optic nerve; and 2b – right orbital haematoma with proptosis and fracture of the medial wall. A normal optic nerve canal is seen (2a). 2c – Coronal view of CT scan demonstrating medial and inferior wall fractures and orbital haematoma.

and inferior cantholysis were not effective in decompressing the orbit. The heparinised state of the patient must have been an important contributing factor as visual loss had occurred despite the presence of floor and medial wall fractures which by themselves decompress the orbit. Prompt surgical evacuation is thus important under these circumstances to effect orbital decompression and reverse visual loss.

### REFERENCES

1. Krohel GB, Wright JE. Orbital hemorrhage. *Am J Ophthalmol* 1979;88:254-8.
2. Katz B, Herschler J, Brick DC. Orbital haemorrhage and prolonged blindness: a treatable posterior optic neuropathy. *Br J Ophthalmol* 1983;67:549-53.
3. Goodall KL, Brahma A, Bates A, Leatherbarrow B. Lateral canthotomy and inferior cantholysis: an effective method of urgent orbital decompression for sight threatening acute retrobulbar haemorrhage. *Injury* 1999;30:485-90.
4. Vassallo S, Hartstein M, Howard D, Stetz J. Traumatic retrobulbar hemorrhage: emergent decompression by lateral canthotomy and cantholysis. *J Emerg Med* 2002;22:251-6.
5. Sampath R, Shah S, Leatherbarrow B. The management of an optic nerve compromising acute retrobulbar haemorrhage: report of a case. *Eye* 1995;9:533-5.
6. Yung CW, Moorthy RS, Lindley D, Ringle M, Nunery WR. Efficacy of lateral canthotomy and cantholysis in orbital hemorrhage. *Ophthalmic Plast Reconstr Surg* 1994;10:137-41.
7. Leong JK, Ghabrial R, McCluskey PJ, Mulligan S. Orbital haemorrhage complication following postoperative thrombolysis. *Br J Ophthalmol* 2003;87:655-6.