

## Intentional Enucleation of the Eyes: An Unusual Cause of Binocular Blindness

<sup>1</sup>S. Dupe Ademola-Popoola, <sup>2</sup>T. Olugbenga Odebode and <sup>3</sup>A. Ismaila Adigun

<sup>1</sup>Department of Ophthalmology, <sup>2</sup>Division of Neurosurgery,  
<sup>3</sup>Division of Plastic and Reconstructive Surgery,  
University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria

**Abstract:** Intentional enucleation of the eye by an assailant is a rare cause of binocular blindness worldwide. We report a 14 year-old Nigerian drummer boy whose two eyes were sub-totally enucleated with a knife for ritual sacrifice by two unknown assailants. He sustained a ragged avulsion of the upper eyelid and peri-orbital tissue and globe enucleation deep to the posterior Tenon's capsule bilaterally. The extraocular muscles were detached leaving remnants of sclera and uveal tissue with intact intra-orbital optic nerve. Plane skull radiographs with orbital views revealed no bony injury. He underwent debridement, primary closure of avulsed tissue and excision of remnants of scleral and uveal tissue. He has been socially rehabilitated, reads with the brail at school and returns to his former occupation and society on vacation. The second patient, a 48-year-old male barber, sustained sub-total traumatic enucleation of both eyes and multiple cranio-facial and cervical machete-cuts by an assailant. There was full thickness avulsion of the upper eyelids, with a circumferential scleral laceration posterior to the rectus muscle insertion bilaterally, leaving remnants of sclera and uveal tissue in virtually empty sockets. Under a deep frontal scalp laceration was a depressed skull fracture with brain extrusion. Skull radiographs confirmed comminuted fracture of the right frontal bone. Craniotomy was performed for debridement, evacuation of extra-dural haematoma, elevation of depressed fracture and dura-defect grafting. Ocular surgery involved excision of remnants of scleral and uveal tissue and primary closure of the avulsed eyelids. Shortly after surgery, he commenced institutionalized vocational training and rehabilitation, which were short-lived because of socio-economic reasons. Intentional enucleation of the eyes by assailants especially for a ritual purpose represents a deplorable but preventable trend in the causation of irreversible visual loss in our setting.

**Key words:** Eye • enucleation • blindness • assault • rituals

### INTRODUCTION

Ocular trauma is the cause of blindness in more than half a million people worldwide and of partial loss of sight in many, it is often the leading cause of unilateral loss of vision particularly in under-developed countries [1]. As an important cause of visual loss, the incidence of ocular trauma is increasing in Nigeria, while the devastation to the person, the family and society is astronomical. Studies in Nigeria showed a changing pattern of ocular injuries over the years with a preponderance of war injuries in the early 70s being replaced gradually by home and school injuries at play and traffic and industrial injuries which predominated over a long period. During this period, traffic injuries were responsible for the greater proportion (84.2%) of head trauma associated with ocular and visual complications occurring in 57 of 225 (25.3%) head injured

patients managed in our centre [2]. However, the pattern seems to have changed again with the rising incidence of armed robbery and civilian-armed struggle and gunshot injuries are becoming more common. Due to an increasing growth of poverty, cultism, mystics, religion and pseudo-science nationwide, a few Nigerians believe in the use of human body or body parts such as the breasts, sexual organs and the eyes for moneymaking, thus introducing another dimension to the causation of blindness in this country. A few cases of intentional enucleation of the eye and other organs; often associated with ritual killings have been reported by the media in many parts of Nigeria. However, such deplorable criminal acts resulting in severe and often life threatening damages "remained uncommon in our setting at the middle belt of Nigeria until recently". We report two cases of binocular blindness resulting from intentional eye enucleation; a 14-year-old

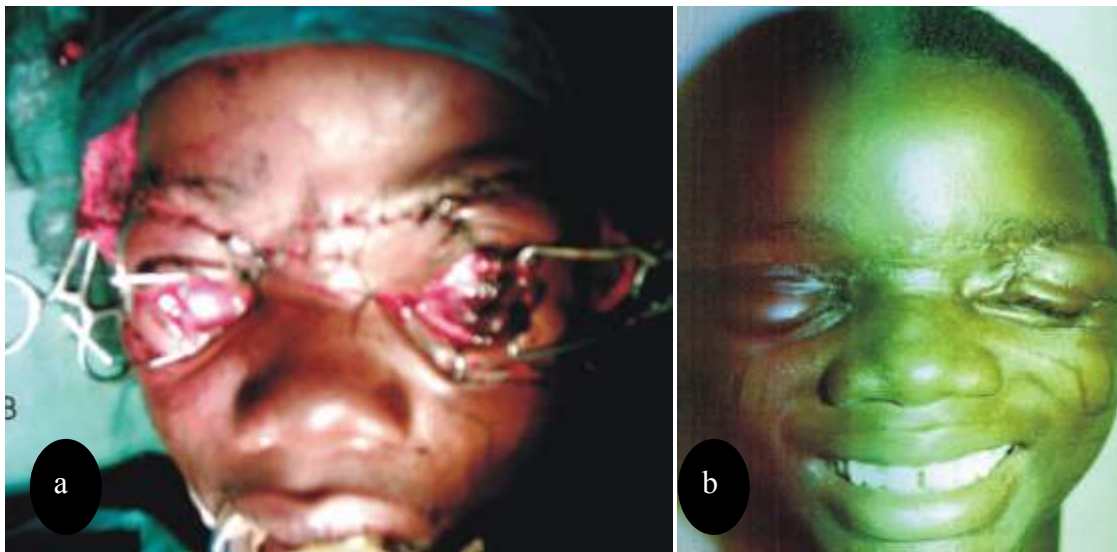


Figure 1: Photographs of the reported 14-year-old boy whose eyes were enucleated showing (a) preoperative ragged avulsion of eyelids and peri-orbital soft tissue with remnants of sclera and uveal tissue in both orbits (b) postoperative healed wounds 6 weeks after injury

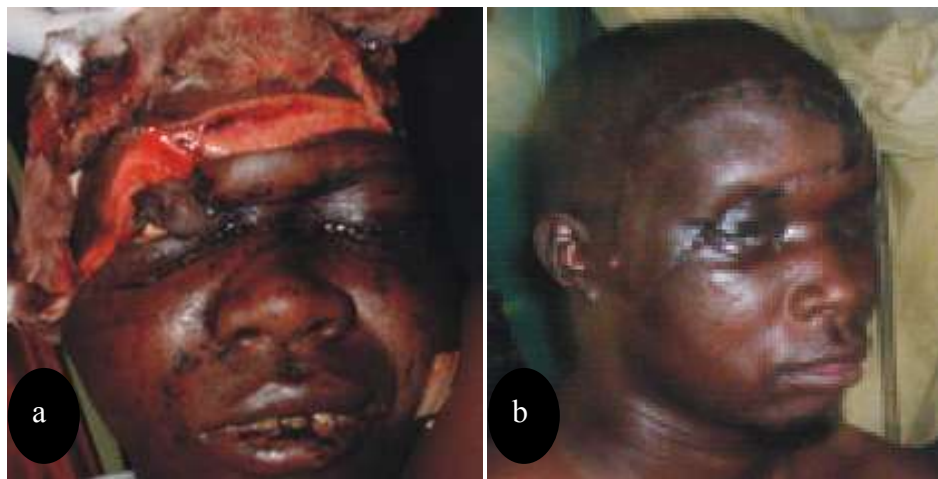


Figure 2: Photographs of the 48-year-old man with partial enucleation of both eyes showing (a) extensive fronto-facial laceration extending into the orbits (b) postoperative appearance 6 weeks after injury

boy and a 48-year-old man that were managed at the University of Ilorin Teaching Hospital, Nigeria for near-total enucleation of both eyes by assailants.

### **CASE REPORTS**

**Case 1:** 14-year-old Nigerian drummer boy, who had enjoyed normal vision in both eyes previously, was alone on the farm when two cattle rearers, attacked him, forcefully enucleating his two eyes with a knife for ritual sacrifice. At presentation, the eyes were severely traumatized; the upper eyelids and peri-orbital tissue were raggedly avulsed while the eyeballs were enucleated deep to the posterior Tenon's capsule leaving behind detached extra-ocular rectus muscles, remnant of sclera and uveal tissue with an intact intra-orbital optic nerve (Fig. 1a). Laboratory findings of peripheral blood revealed haemoglobin of  $8.0 \text{ g dl}^{-1}$  and normal blood biochemistry. Skull radiographs with coned orbital views were normal. Anti-tetanus prophylaxis and broad-spectrum antibiotics were administered. He underwent debridement and primary repair of avulsed periorbital and intra-orbital tissue (Fig. 1b). The boy has been socially rehabilitated, reads with the brail at school and returns to his former occupation and society on vacation.

**Case 2:** A 48-year-old Nigerian male barber, who had previously enjoyed normal vision in both eyes, was attacked with a machete by an assailant over a dispute. He sustained multiple cranio-facial and cervical lacerations and removal of both eyes. Clinical examination revealed an unconscious patient (Glasgow coma score = 11), an open depressed frontal skull fracture with brain extrusion, full thickness avulsion of the upper eyelids and a near-total enucleation of both eyes (Fig. 2a) with total blindness. The sclera was lacerated circumferentially posterior to the rectus muscle insertion in both eyes leaving a remnant of sclera and uveal tissue in virtually empty sockets. Plane skull radiographs revealed comminuted frontal skull depressed fractures. Haematologic profile and blood biochemistry were normal except for a haemoglobin of  $9.5 \text{ g dl}^{-1}$ . Anti-tetanus prophylaxis, broad-spectrum antibiotics and mannitol (20%) were administered while the cervico-facial lacerations were sutured primarily. At craniotomy for debridement, elevation of depressed skull fracture and fascia-lata-grafting of dural defect, an extradural haematoma encountered was evacuated. Ocular surgery involved excision of the remnants of sclera and uveal tissue as well as primary closure of the avulsed eyelids (Fig. 2b). Postoperatively, he regained consciousness at seven days following injury.

Institutionalized vocational training and rehabilitation that commenced promptly after recovery of consciousness were short-lived because he opted for a voluntary discharge due to socioeconomic reasons.

### **DISCUSSION**

Worldwide and especially in developing countries [3] eye injuries remain the most common cause of monocular blindness, a life-long disability [4], a bilateral involvement as in the cases reported being rare. The burden and challenge of such visual morbidity become more enormous when it is sudden and total, especially in a socio-economically and resource poor society like ours, where social service are practically non-existent. The burden is worse in children represented by the first case, because of the impact of blindness on the overall development and future prospects of the child [5]. Even eye injuries, with outcome less serious than blindness often require extensive medical care, including surgery, hospitalization and repeated treatment over long periods [6].

Although, the possibility of preserving a severely traumatized eye has been greatly improved by the advent of vitrectomy and other sophisticated salvage procedures that reduce the use of emergency post-traumatic enucleation, our patients' eyes were damaged beyond repair with severe sclero-retinal injury and ruptured globes. The chance of visual restoration using any salvage procedure was obviously slim even if the enucleated eyeballs were available for a possible immediate re-implantation. The most reasonable option in this instance was to complete the sub-total traumatic enucleation by total excision of the uveal and scleral remnants. Such assault related mutilating ocular injuries are typically associated with poor prognosis for visual recovery, since the post-traumatic visual status in the victims reflects the severity of the initial ocular trauma and that of an intention to harm or kill. The anatomical extent of damage to the oculo-optic complex is a major determinant of post-treatment visual outcome.

Case 1 exemplifies an unusual trend in assault-related eye injuries in our setting, a practice emanating from a blend of poverty with cultic, religious and superstitious beliefs. This has led to increased ritualistic killing and kidnapping in our society and the use of human bodies or body parts for moneymaking rituals. Some Nigerians, especially in the south, believe that they could become rich and powerful by sacrificing humans and using their body parts for rituals. It appears that this practice is slowly spreading to the middle belt of Nigeria where the

two patients were attacked. Ritual killing is a common practice in Nigeria. Hundreds of Nigerians lose their lives to ritual murderers who go in search of human parts at the behest of witch doctors who require them for the preparation of assorted magical potions which some believe can make them rich, protect them from harm, make them powerful or ward off misfortune. Children are often the effortless targets of such ritual murders as the first case indicates, because they naturally offer the least resistance to kidnappers [7, 8]. Of 29 cases of murder-suicide reported by Byard, 23 (79.3%) were children aged from 10 months to 15 years (average, 6.0 years). Though assault related ocular injury may be difficult to prevent [5], the assault related blindness in the reported child would have been prevented if older adults were available for a rescue. Regarding Case 2, a social reorientation is required to encourage settling of disputes without mutilating injuries to the persons involved.

Apart from mutilating eye injuries by second-party assailants, a commoner type of intentional trauma to the eye is a self-inflicted injury. A number of self-inflicted enucleation of the eye or severe mutilating ocular self-injury has been reported in the literature [9-11]. Most of the reports indicate that this act probably protects the patients from guilt and suicide [9], the enucleation occurring in various psychotic syndromes such as schizophrenia [10], with command hallucinations [11], religious delusions [9, 11] and propensity to act on delusions [11]. However, the current patients had no background psychological instability. Their presentation rather gives credence to the role of poverty, superstition and negative societal influence in determining such barbarous acts of the assailants.

### **CONCLUSION**

Intentional enucleation of the eyes, especially for a ritual sacrifice presents an unfortunate but preventable trend in the causation of irreversible visual loss in our setting.

### **ACKNOWLEDGEMENT**

We acknowledge the assistance rendered by Drs. B.T. Akanbi and A. Adeboye of the Ophthalmology Department, University of Ilorin Teaching Hospital, Ilorin, Nigeria.

### **REFERENCES**

1. WHO, Geneva, 1997. Strategies for the Prevention of Blindness in National Programmes. A Health care Approach. 2<sup>nd</sup> Edition. WHO Library Cataloguing England, pp: 74-76.
2. Odebo, T. O., D.S. Ademola-Popoola, T.A. Ojo and A.A. Ayanniyi, 2005. Ocular and visual complications of head injury. *Eye*, 19: 561-566.
3. Kennedy, B.L., 1994. Self-inflicted injuries. Case presentation and literature review. *Hosp. Community Psychiatry*, 45: 470.
4. Keane, R. and R.W. Balon, 1992. Post traumatic cranial neuropathies. *Neurol. Clinic.*, 10: 849-867.
5. Groessl, S., S.K. Nanda and W.F. Mieler, 1993. Assault related penetrating ocular injury. *Am. J. Ophthalmol.*, 116: 26-33.
6. Trudy, K.A. and K.E.K. Babara, 1986. The incidence of acute hospital-treated eye injuries. *Arch. Ophthalmol.*, 104: 1473-1476.
7. Scholtz, H.J., V.M. Phillips and G.J. Knobel, 1997. Muti or ritual murder. *Forensic Sci. Int.*, 87: 117-123.
8. Byard, R.W., D. Knight, R.A. James and J. Gilbert, 1999. Murder-Suicides involving Children: A 29-year study. *Am. J. Forensic. Med. Pathol.*, 20: 323-327.
9. Ananth, J., H.S. Kaplan and K.M. Lin, 1984. Self-inflicted enucleation of an eye: Two case reports. *Can. J. Psychiatry*, 29: 145-146.
10. Tapper, C.M., R.C. Bland and L. Danyluk, 1979. Self-inflicted eye injuries and self-inflicted blindness. *J. Nerv. Ment. Dis.*, 167: 311-314.
11. Field, H.L. and S. Wald-Fogel, 1995. Severe ocular self-injury. *Gen Hosp. Psychiatry*, 17: 224-227.