

## ABSTRACT

### **Introduction**

Trauma is an important cause of morbidity and mortality in most disciplines in the practice of medicine and constitutes a great proportion of patients seen in emergency departments. Ocular trauma causes significant visual morbidity and fortunately mortality from purely ocular injuries is rare unless the patient develops complications that spread into the cranium. Although, studies have been done to find out causes of ocular trauma that result in hospital admission, including one at SKH, the prevalence of good visual outcomes has not been evaluated. This study was therefore conducted to evaluate the prevalence of good visual outcomes following penetrating corneal injury and surgical repair at SKH.

### **Objectives**

The principal objective was to analyze the visual outcomes of patients in the study population who underwent surgical repair for penetrating corneal injuries at SKH. The specific objectives were to describe the demographics of the study population, to elicit the causes of penetrating corneal injuries and to evaluate the best corrected monocular visual acuities of the patients' eyes under study.

### **Design of Study**

A hospital based prospective study.

### **Study Setting**

Study was conducted at Sekuru Kaguvi Hospital, Parirenyatwa Group of Hospitals.

## **Study Population**

Patients who had surgical repair of penetrating corneal injuries at SKH between August 2012 and April 2013, meeting enrolment criteria were recruited.

## **Methods**

Authorization to carry out the study at SKH was granted by the Joint Research and Ethics Committee. Patients with penetrating corneal injuries referred to SKH were managed as per standard operating procedure. Day 1 post operatively the researcher interviewed and examined patients for eligibility to enroll into study. Data about the patients' demography, history about the injury and examination findings were captured onto data sheet. Patients were followed up a total of 7 weeks post surgical repair and were seen Day 1, 2 weeks, 6 weeks and 7 weeks post operatively. At six weeks post op, corneal sutures were removed on the slit lamp. Best corrected monocular visual acuities of the injured eyes were evaluated at week 7 objectively and subjectively. Examination findings of state of anterior and posterior segments were recorded.

## **Results**

Seventy (70) patients were recruited into study. Median age of the patients was 39 years, range 6 to 72 years. The male: female ratio was 2.7:1. The proportion of patients that achieved best corrected monocular visual acuities (BCVA) of 6/60 or better was 59% (n=41). There was an association between the BCVA and location of the corneal scar ( $p=0.001$ ). The association between the BCVA and the status of the lens was also statistically significant ( $p=0.001$ ). The main causes of bad visual outcome (BCVA worse than 6/60) were irregular astigmatism, vitreous hemorrhage and corneal scar in the visual axis and dense traumatic cataracts.

Males were more than twice at risk of getting injured. Age and gender were risk factors for injury with males below 40 years of age being more at risk of injury. The main causes of injury were vegetative matter and metallic objects. There was a statistically significant association between object of injury and gender ( $p=0.016$ ).

### **Conclusions**

The results showed that the proportion of patients that achieved good visual outcomes (BCVA of 6/60 or better) at Sekuru Kaguvi Hospital after surgical repair for penetrating corneal injury was 59% during the study period. Irregular corneal astigmatism, vitreous hemorrhage and central corneal scarring were the major causes of visual outcomes worse than 6/60. Males were affected more than females by a ratio of 2.7:1. The causes of injuries could suggest gender roles in society, where males were injured mostly by metallic objects and females by vegetative material.

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## ABBREVIATIONS

SKH – Sekuru Kaguvi Hospital

BCVA – Best corrected visual acuity.

IOP – intraocular pressure.

OP – operation

VA – visual acuity.

RGP – rigid gas permeable contact lenses.

90D – ninety dioptre lens.

20D – twenty dioptre lens.

IOL – intraocular lens.

ACWO – anterior chamber washout.

WHO – World Health Organization

USEIR- United States Eye Injury Registry.

## Definition of Terms

1. Cornea - the anterior transparent part of the globe/eye.
2. Penetrating cornea injury – an injury that breaches the full thickness of the cornea to enter into the anterior chamber of the eye (or beyond).
3. Visual Acuity – ability of the eye to resolve different components of an object and see it as one. Visual acuity is commonly measured using a Snellen Chart.
4. Snellen chart – comprises of black letters printed on a white background on a rectangular chart. The letters are arranged in rows of decreasing size from the top. Each row of letters subtends an angle of 5 minutes of arc on the retina from the distance it is read. There are variations of the Snellen chart to cater for literacy levels.
5. Astigmatism – when a refracting surface has different refractive powers in different meridians.
6. Aniseikonia – when the difference in relative image magnification of the two eyes is so large the images cannot be fused into one image resulting in perception of two images of the same object (diplopia), for example, aniseikonia results when unilateral aphakia is corrected by aphakic spectacles.
7. Aphakia – a condition of the eye in which it does not have the natural crystalline lens (aphakic – adjective).
8. Pseudophakia – a condition of the eye in which the natural crystalline lens has been removed and replaced with a natural intraocular lens (pseudophakic – adjective).

9. Cataract – when the natural transparent crystalline lens of the eye becomes opaque (cataractous – adjective).
10. Endophthalmitis – the inflammation of the internal structures of the eye including the vitreous body. It can be infectious or sterile. After penetrating eye injuries it is almost always infectious.
11. Vitreous hemorrhage – blood in the vitreous body, due to trauma in penetrating injuries.
12. Retina detachment – the separation of the retina, the light sensitive part of the eye, from the structure behind it thereby cutting off the nourishment supply lines of the outer layers of the retina.