

Indications for destructive eye surgery at Sekuru Kaguvi Eye Hospital, Zimbabwe

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ABSTRACT

Background: Destructive Eye Surgery (DES) is a management option that is offered as a final resort where keeping the globe risks jeopardizing life or the general health of an individual. The three destructive eye operations are: evisceration, enucleation and exenteration in order of increasing aggressive nature of the operation.

Objective: To find out the common indications for destructive eye surgeries (DES) at Sekuru Kaguvi Hospital (SKH).

Methods: Patients who presented to Sekuru Kaguvi Hospital in the period January to March 2017 who ended up having some form of DES were enrolled into the study. Data was collected on participant demography, occupation, the affected eye, diagnosis and the subsequent DES done.

Results: A total of 37 eyes of 37 patients had DES done during the period January to March 2017. Generally more males had DES done on them compared to females (73%). Percentages of the DES done were: eviscerations 51.4%, enucleations 29.7% and exenterations 18.9%. The main indication for DES was trauma in 32.4%, followed by retinoblastoma in 21.6%, panophthalmitis in 21.6%, ocular surface squamous neoplasia in 18.9%, staphyloma and painful blind eye in 5.4%. The commonest indication for the eviscerations was a ruptured globe in 57.9%, the remainder being panophthalmitis. There was a total of 11 ruptured globes requiring an evisceration and 10 (90.9%) were males. Globe ruptures attributed to assault were 71.2%. The mean age for eviscerations was 39.21 years. Of the total enucleations done, 72.7% were children under 5 years (average age 2 years), the commonest indications being retinoblastoma in this group (87.5%). A total of 7 exenterations were performed, the commonest indication being ocular surface squamous neoplasia in 85.7%. Males were at a higher chance of being exenterated than females (5:2). Most of the removed eyes had no vision (no light perception in 73%, light perception in 18.9%, hand movement in 5.4% and 3/60 in 2.7%).

Conclusion: The main indication for DES was trauma followed by panophthalmitis and retinoblastoma. The commonest indication for exenteration was OSSN which can be treated earlier before warranting eye removal. There is thus need to address these preventable conditions and risks that can lead to eye removal.

Key words: Sekuru Kaguvi Hospital (SKH), Destructive Eye Surgery (DES), Evisceration, Enucleation, Exenteration

INTRODUCTION

Destructive Eye Surgery (DES) consists of evisceration, enucleation or exenteration in ascending order of their destructive extent¹. It is a management option offered to patients when further retention of the globe is likely to affect ocular and general health or jeopardize survival. The eyes contribute immensely to an individual's overall appearance and self-image. The decision to remove an eye is often difficult for both the doctor and the patient because of the enormous psychological sequelae². The loss of an eye often occurs suddenly due to trauma and infection in our environment and patients are often poorly prepared to deal with the decision. It is more grievous when the second eye is already blind. Indeed, depression has been reported after DES³.

Evisceration is the removal of all intraocular contents but leaving the sclera. Important indications include

a ruptured globe and a blind eye with an intractable infection (endophthalmitis or panophthalmitis) preventing the spread of infection to the cerebro-spinal fluid⁴. Enucleation is the removal of the eyeball. Indications include a ruptured globe, painful blind eye, an unsightly blind eye and intraocular malignancy such as retinoblastoma¹. The enucleation of a severely traumatized eye also serves as a prophylaxis against the development of sympathetic ophthalmia⁵. The latter is an autoimmune, lymphocytic attack on the uveal tract of both eyes following sensitization of lymphocytes to uveal tissue after penetrating trauma in one eye⁵. Enucleation of the injured eye prior to the development of sympathetic ophthalmia is very effective in preventing its occurrence^{1,5}.

Exenteration, either radical or modified, involves removal of the eyeball and all contents of the orbit. These include the orbital fat, lacrimal gland, extraocular

muscles, periorbita, eyelids and a varying amount of surrounding skin and bone. It is a disfiguring procedure with devastating functional, aesthetic and psychological consequences³. In Zimbabwe the commonest indication is advanced OSSN^{3,6}.

MATERIALS AND METHODS

This was a cross sectional study. Patients who presented to Sekuru Kaguvi Hospital in the period January to March 2017 who ended up having some form of DES were enrolled into the study. A data collecting tool was used to capture the required fields for the study. Verbal informed consent was administered. Inclusion criteria were patients who presented to SKH who ended up having any form of DES. Exclusion criteria were patients/care-givers who were unable to give informed consent at the time of the study. Data was processed using Statistical Package for Social Sciences (SPSS).

RESULTS

A total of 37 eyes of 37 patients were removed during the period January to March 2017. Generally more males had DES done on them compared to females (73%). Percentages of the DES done were: eviscerations 51.4%, enucleations 29.7% and exenterations 18.9%. (Figure 1).

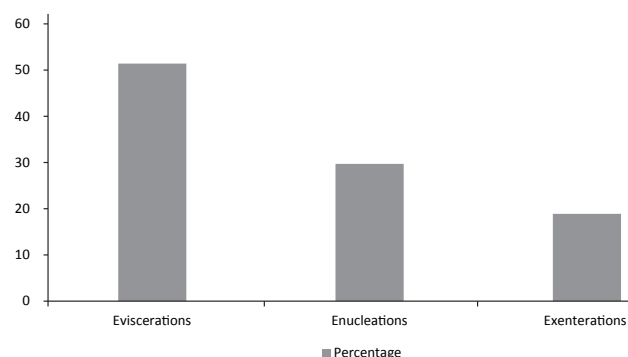


Figure 1: Percentages of DES done

Table 1: Summary of the DES done and their indications

Type of surgical procedure	Invasive squamous cell neoplasia	Globe rupture	Panophthalmitis	Staphyloma	Retinoblastoma
Evisceration	0	11	8	0	0
Enucleation	0	1	0	2	8
Exenteration	6	0	0	0	1
Total	6	12	8	2	9

The main indication for DES was trauma in 32.4%, followed by retinoblastoma in 21.6%, panophthalmitis in 21.6%, ocular surface squamous neoplasia in 18.9%, staphyloma and painful blind eye in 5.4% (Figure 2).

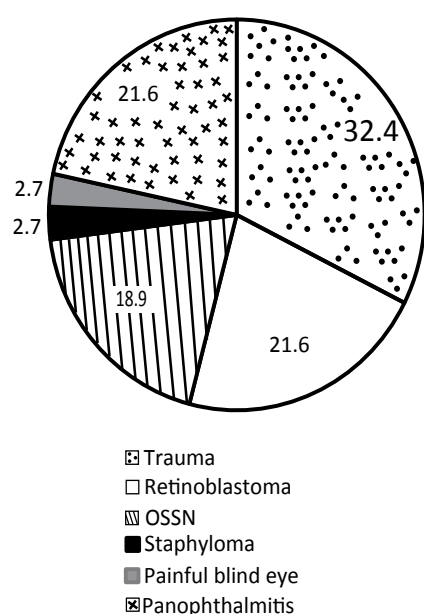


Figure 2: Indications for DES

The commonest indication for the eviscerations was a ruptured globe in 57.9%, the remainder being panophthalmitis and the mean age for this DES was 39.21 years. Age distribution is also given in Table 2.

Table 2: Age distribution in years by frequency of DES

Age group (years)	Frequency
0-10	13 (35.1%)
11-20	3 (8.1%)
21-30	6 (16.2%)
31-40	2 (5.4%)
41-50	4 (10.8%)
51-60	4 (10.8%)
61-70	2 (5.4%)
>70	3 (8.1%)

Globe ruptures attributed to assault were 71.2%. There was a total of 11 ruptured globes requiring an evisceration and 10 (90.9%) were males. Of the total

enucleations done, 72.7% were children under 5 years (average age 2 years), the commonest indications being retinoblastoma in this group (87.5%). A total of 7 exenterations were performed, the commonest indication being ocular surface squamous neoplasia in 85.7%. Males were at a higher chance of being exenterated than females (5:2). Most of the removed eyes had no vision (no light perception in 73%, light perception in 18.9%, hand movement in 5.4% and 3/60 in 2.7%). Over half of the total DES done, 22 (59.5%), were performed under general anaesthesia and these were all the enucleations and exenterations and 4 eviscerations (10.8%).

DISCUSSION

The average age of patients who had DES at SKH during the period of the study was 31.2 years and 43.1 years after excluding those below 5 years. This finding is comparable to 30.1 years recorded by Musa *et al*⁷ but lower than the 40.8 years, 43.78 years and 45.6 years documented by Nwosu,⁸ Eballé *et al*.⁹ and Ajibode *et al*¹⁰ respectively. The observation that the first decade of life was most affected is similar to the experience in previous studies by Eballe *et al*⁹ in Cameroun, and Gyasi *et al*¹¹ in Ghana. This is worrisome because of the “blind years” ahead of these children as well as the potential facial asymmetry with attendant psychosocial implication and social outcast effect that could occur if prosthesis is poorly fitted or not fitted at all⁷. There is also reported depression associated with DES in a study done in Zimbabwe by Kawome³.

The commonest indication for DES at SKH was due to trauma (32.4%) and being a male was a risk factor. This finding was consistent with similar observation by Musa *et al*⁷ and the affected age was mainly in the economically active group of 21-40 years. This has a bearing on the socioeconomic function of the affected individual and families. The majority of the causes of the trauma were assault, domestic disputes and road traffic accidents which can be prevented.

Retinoblastoma was the commonest indication for enucleation and the commonest indication for eye removal in the under 5 years age group. One child who had late presentation had an exenteration due to orbital spread. This finding is comparable to similar findings by Musa *et al*⁷ where retinoblastoma was the most common indication for eye removal in the first decade of life⁷⁻⁹.

This finding may be due to the fact that retinoblastoma is the commonest intraocular tumour in childhood. Most patients present late when the globe can no longer be salvaged⁷. There is thus need to intensify screening for retinoblastoma in children.

Ocular infection (panophthalmitis) contributed to 21.6% of the removed eyes. The average affected age was 61 years and is comparable to similar findings in literature⁷⁻⁹. There is generally immunosuppression in advanced age and increased risk factors for ocular infections in this age group e.g blepharitis, dry eyes and poor hygiene¹². Early treatment of these ocular conditions predisposing to ocular infection can be the main approach to prevent loss of an eye.

Evisceration was the most commonly performed destructive eye surgery in this study (51.4%). This is in agreement with previous documentations in the literature⁷⁻⁹. Most of the performed eviscerations were done under local anaesthesia meaning that the technicalities in doing an evisceration are better than enucleation and thus, all things being equal most surgeons would perform an evisceration⁷. Furthermore, badly damaged eyes, either due to trauma or infection, being the most common indication for evisceration, were responsible for more than half of the eyes removed. The notion that evisceration has the advantages of relative tissue preservation, better mobility of prosthesis, less operation time, lower risk of orbital implant extrusion or transmission of infective materials into cavernous sinus causing intracranial infection in endophthalmitis/panophthalmitis, relative to enucleation could make it a natural preference^{7,9}.

The commonest indication for an exenteration in this study was advanced squamous cell carcinoma and this is in keeping with previous study done at SKH by Masanganise and Magava⁶. Ocular surface neoplasia is common in HIV positive patients and also after chronic ultraviolet light exposure¹². Early changes of OSSN can be detected on routine ophthalmological assessment and treatment instituted before warranting exenteration. Public health measures also need to continue to combat new HIV infection and spread.

CONCLUSION

Most of the common indications for DES at SKH namely, trauma, ocular tumours (retinoblastoma and OSSN) and infections are preventable. The affected

age groups are either children or the economically active age group. Therefore, improvement in eye health education, genetic counselling and provision of free health care to facilitate better access to quality eye care services can be recommended.

REFERENCES

1. Spaeth G. Ophthalmic surgery: Principles and practice. 3rd ed. Philadelphia: WB Saunders; 2003.
2. Odugbo OP, Wade PD, Samuel OJ, Mpyet CD. Indications for destructive eye surgeries among adults in a tertiary eye care center in North Central Nigeria. *J West Afr Coll Surg*. 2015; **5**(2): 134-153.
3. Kawome M. Post-destructive eye surgery, associated depression at Sekuru Kaguvi Hospital Eye Unit, Zimbabwe: Pilot study. *S Afr Optom*. 2013; **72**(2): 71-75.
4. Birkmann LW, Bennett DR. Meningoencephalitis following enucleation for cryptococcal endophthalmitis. *Ann Neurol*. 1978; **4**(5): 476-477.
5. Yanoff Myron, Sassani Joseph W. Ocular Pathology(6th Ed), Elsevier, 2015 page 73.
6. Masanganise R, Magava A. Orbital exenterations and squamous cell carcinoma of the conjunctiva at Sekuru Kaguvi Eye Unit, Zimbabwe. *Cent Afr J Med*. 2001; **47**(8): 196-199.
7. Musa KO, Aribaba OT, Onakoya AO, Rotimi-Samuel A, Akinsola FB. Indications for destructive eye surgeries at a Nigerian tertiary eye care centre: A ten-year review. *Niger Postgrad Med J*. 2016; **23**(1): 12-16.
8. Nwosu SN. Destructive ophthalmic surgical procedures in Onitsha, Nigeria. *Niger Postgrad Med J*. 2005; **12**(1): 53-56.
9. Eballe AO, Dohvoma VA, Koki G, Oumarou A, Bella AL, Mvogo CE. Indications for destructive eye surgeries at the Yaounde Gynaeco-Obstetric and Paediatric Hospital. *Clin Ophthalmol*. 2011; **5**: 561-565.
10. Ajibode HA, Thanni LO, Onabolu OO, Bodunde OT, Otulana TO. The spectrum of eye injuries in Sagamu, Nigeria. *West Afr J Med*. 2013; **32**(3): 220-223.
11. Gyasi ME, Amoaku WM, Adjuik M. Causes and incidence of destructive eye procedures in north-eastern ghana. *Ghana Med J*. 2009; **43**(3): 122-126.
12. Bowling B. Kanski's clinical ophthalmology. 8th Ed: Elsevier; 2016.