

Indications for destructive eye surgeries in a state tertiary hospital in Enugu: a 10-year retrospective study

Eze G. C^{1*}, Ozioko N. M², Okoloagu N. N¹

¹Ophthalmology Department, ESUT Teaching Hospital Parklane Enugu and College of Medicine Enugu State University of Science and Technology Enugu.

²Northumbria University, Department of Social Work Education and community well-being, Newcastle upon Tyne, NE18ST.

***Corresponding Author:** Eze G. C, Ophthalmology Department, ESUT Teaching Hospital Parklane Enugu, and College of Medicine Enugu State University of Science and Technology Enugu.

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Abstract

Destructive eye surgeries lead to permanent loss of eye and ultimately vision. The aim of this study was to find out the indications for destructive eye surgeries in a tertiary hospital in Enugu. It was a 10-year retrospective study. Patients' folders were retrieved and necessary information was extracted from them. Data was analyzed using IBM SPSS version 21. A total of 65 patients were studied within the period. Male to female ratio was 1.1:1. Mean age was 52.86 ± 23.73 . Adults were involved more than children. The commonest indication for destructive surgeries was infective causes (40%) followed by traumatic causes (30.8%). The commonest type of destructive surgery was evisceration (90.8%). The commonest indications for destructive eye surgeries are preventable. Thus, there is a need to educate the masses on eye health to avoid practices that may lead to eye removal.

Keywords: Indications, Destructive eye surgeries, Tertiary Hospital, Enugu.

Introduction

Destructive eye surgeries are procedures that involve the removal or destruction of eye tissues. These surgeries are performed when there is an intraocular, orbital, or eye adnexal malignancy including retinoblastoma, uveal or conjunctival melanoma, basal cell carcinoma, squamous cell carcinoma, or lacrimal gland carcinoma [1]. They may also be done when other treatments to salvage the eye have been exhausted or the eye is non-functional or causing extreme pain, disfigurement or due to irreparable damage from trauma [1]. The commonly performed procedures for globe removal are evisceration and enucleation and rarely exenteration. Evisceration is an ophthalmic surgery that removes only the internal contents of the eyeball leaving the white part of the eye (the sclera) and the eye muscles [2, 3]. Enucleation is the surgical removal of the entire eyeball leaving behind the lining of the eyelids and muscles of the eye [2, 3]. Exenteration involves the removal of the entire eyeball, complete or partial removal of the orbital soft tissues as well as varying parts of the bone of the orbit [2]. Following these surgeries (where feasible), orbital implants and eye conformers are used to occupy the empty orbit and

conform the tissue surrounding the eye to prepare the socket for a prosthesis. The ultimate goals of these surgeries are to safely and effectively remove the diseased eye or orbital contents using advanced surgical techniques, eliminate the severe underlying ocular pathology, and provide excellent long-term cosmesis.

The non-traumatic indications for destructive eye surgeries include panophthalmitis, treatment-unresponsive endophthalmitis, painful blind eyes, phthisis bulbi with degeneration, unsightly eyes and intraocular tumors, and spontaneous globe rupture [4]. Ocular trauma is a significant cause of ocular morbidity and blindness all over the world. Traumatic eye injuries are more common among the young and active population who may be more prone high-impact eye injuries [3]. Work-related and road traffic accidents can result in irreparable damage and loss of eye especially in cases of penetrating globe injuries. The eyeball may be lost depending on factors such as the mechanism of injury, extent of damage, time of presentation, the expertise of the attending doctor and availability of facilities for intervention [5]. Postoperative outcome of salvage globe surgeries in developing countries may be slightly lower than

elsewhere in the world due to modern retinal surgery facilities [6].

The acute loss of vision and disfigurement has extreme psychosocial implications. As a result, proper counseling should be an important aspect in the management of these patients. Knowledge about the indications for destructive eye surgeries may help to improve early presentation in cases of vegetative trauma which may be complicated by panophthalmitis leading to loss of the eye. It may also help to improve adherence to intraocular pressure lowering medications in advanced glaucoma patients who may present with globe rupture due to high intraocular pressure. Therefore, this research aims to provide valuable information on the indications for destructive eye surgeries in a major tertiary eye center and which can help in health policy planning and may also inform future research.

Materials And Methods

This was a ten-year retrospective observational study on the indications for destructive eye surgery among patients seen at Enugu State University of Science and Technology Teaching Hospital Parklane Enugu (ESUTTHP) from January 2012 to December 2021. ESUTTHP Enugu has an established Ophthalmology unit that runs eye clinic from Monday to Friday every week. Case files of all the patients who had destructive eye removal within the study period were retrieved from the medical records unit. The following information (not based on a standardized questionnaire) were extracted from the case files and recorded in a proforma: age, gender, type of destructive eye surgery done, indication for the destructive eye surgery. All the patients with complete required information documented in their case files were included in the study while those with incomplete information were excluded. The collected data was analyzed using Statistical Package for Social Science version 21 (SPSS Inc. Chicago Illinois USA). Result was presented in tables, frequencies and percentages. Chi-square test was done to test for association between type of destructive eye surgeries, indications for destructive eye surgeries, age and gender. P-value < 0.05 was considered as statistically significant.

Results

A total of 65 subjects were included in this study, 34 males and 31 females with a mean age of 52.86 ± 23.73 (Table 1).

Table 1: Socio-demographics of the study subjects

Variables	Frequency	Percentage	Mean ± SD
Age (Years)			
0 - 10	7	10.8	
11-20	0	0	
21-30	3	4.6	
31-40	9	13.8	
41-50	8	12.3	52.86
51-60	10	15.4	±23.73
61-70	13	20.0	
71-80	10	15.4	
81-90	4	6.2	
91-100	1	1.5	
Total	65	100.0	
Gender			
Male	34	52.3	
Female	31	47.7	
Total	65	100.0	

The commonest indication for destructive eye surgeries is infective causes. This is followed by traumatic causes, absolute glaucoma, tumors, and staphyloma in decreasing order (Table 2 and 3).

Table 2: Indications for Destructive Eye Surgeries (DESSs)

Indications for DESSs	Frequency	Percentage
Ruptured globe due to Severe ocular trauma	19	29.2
Panophthalmitis	14	21.5
Ruptured Globe due to absolute glaucoma	11	16.9
Endophthalmitis	8	12.3
Keratitis/Globe perforation	4	6.2
Retinoblastoma	4	6.2
Staphyloma	3	4.6
Advanced Conjunctival Squamous Cell Carcinoma	1	1.5
Orbital Abscess due to severe ocular trauma	1	1.5
Total	65	100.0

Table 3: Summary of Indications for Destructive Eye Surgeries (DESSs)

Indications for DESSs	Frequency	Percentage
Infective	26	40.0
Traumatic	20	30.8
Absolute glaucoma	11	16.9
Tumor	5	7.7
Staphyloma	3	4.6
Total	65	100.0

The commonest type of destructive eye surgery done was evisceration followed by enucleation. None of the study subjects had exenteration (Table 4). There was a significant association between age and the type of

destructive eye surgery done as well as the indications for the surgery. There is no significant association between gender and the type of

destructive eye surgery done as well as the indication for the destructive eye surgery (Table 5 and 6).

Table 4: Types of Destructive eye surgeries

Types of Destructive eye surgeries	Frequency	Percentage
Evisceration	59	90.8
Enucleation	6	9.2
Total	65	100.0

Table 5: Test association between Types of Destructive Eye Surgeries and Gender and Age

Variables	Types of Destructive Eye Surgeries		Total	Chi-square/ Fisher's exact (P-values)
	Enucleation	Evisceration		
Age (Years)				
0 - 10	4(66.7)	3(5.1)	7(10.8)	
11-20	0(0.0)	0(0.0)	0(0.0)	
21-30	0(0.0)	3(5.1)	3(4.6)	
31-40	0(0.0)	9(15.3)	9(13.8)	
41-50	1(16.7)	7(11.9)	8(12.3)	23.355 (0.022*)
51-60	0(0.0)	10(16.9)	10(15.4)	
61-70	0(0.0)	13(22.0)	13(20.0)	
71-80	1(16.7)	9(15.3)	10(15.4)	
81-90	0(0.0)	4(6.8)	4(6.2)	
91-100	0(0.0)	1(1.7)	1(1.5)	
Total	6(100.0)	59(100.0)	65(100.0)	
Gender				
Male	5(83.3)	29(49.2)	34(52.3)	2.551
Female	1(16.7)	30(50.8)	31(47.7)	(0.110)
Total	6(100.0)	59(100.0)	65(100.0)	

Table 6: Test association between Indications for Destructive Eye Surgeries and Gender & Age

Age (years)	Indications for Destructive eye surgeries					Total	Chi-square/Fisher's exact (p-values)
	Absolute glaucoma	Infective	Staphyloma	Traumatic	Tumour		
0 - 10	0 0.0%	1 3.7%	0 0.0%	2 10.0%	4 80.0%	7 10.8%	
11-20	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	
21-30	0 0.0%	1 3.7%	0 0.0%	2 10.0%	0 0.0%	3 4.6%	
31-40	0 0.0%	3 11.1%	1 50.0%	5 25.0%	0 0.0%	9 13.8%	
41-50	0 0.0%	3 11.1%	0 0.0%	4 20.0%	1 20.0%	8 12.3%	65.911 (0.048*)
51-60	2 18.2%	5 18.5%	0 0.0%	3 15.0%	0 0.0%	10 15.4%	
61-70	2 18.2%	9 33.3%	1 50.0%	1 5.0%	0 0.0%	13 20.0%	
71-80	4 36.4%	4 14.8%	0 0.0%	2 10.0%	0 0.0%	10 15.4%	
81-90	3 27.3%	1 3.7%	0 0.0%	0 0.0%	0 0.0%	4 6.2%	
91-100	0 0.0%	0 0.0%	0 0.0%	1 5.0%	0 0.0%	1 1.5%	
Gender							
Male	6 54.5%	14 51.9%	0 0.0%	10 50.0%	4 80.0%	34 52.3%	4.851 (0.437)
Female	5 45.5%	13 48.1%	2 100.0%	10 50.0%	1 20.0%	31 47.7%	

Discussion

Destructive eye surgeries are quite challenging when it comes to obtaining informed consent from patients or caregivers before performing such surgeries. This is because nobody would easily want to lose his or her eye no matter the level of vision in the eye or the indication for which eye removal is offered. We all would prefer our globe is preserved.

In the present study, the mean age of the study participants was 52.86 ± 23.73 . Most people affected were older adults >40 years accounting for 70.8% of the subjects. Young adults aged 21 to 40 years comprised of 18.4% whereas children accounted for only 10.8%. This is in contrast with a previous study in the same location by Eze et al in which the incidence of eye removal in young people aged 21-40 years was 41.5% [7]. The disparity could be due to the differences in the sample size with the present study being approximately half of the previous study. In addition, similar studies in other geopolitical regions of the same country also found higher incidences of eye removal in young people and children, unlike the present study [5, 8-12]. This could be due to the differences in the culture and lifestyles in the different geopolitical regions. The study in Ghana found that one-fourth of cases were in children which is similar to the present study where fewer children were involved [13]. However, there was a significant association between age and the type of destructive eye surgery done as well as the indications for the surgery in the present study.

Males were slightly higher than females in the present study with male to female ratio of 1.1:1. This agrees with most previous studies which found more males to have destructive eye surgeries than females [3, 7, 14-17]. Other studies have found that being male is a risk factor for eye removal [10,12]. However, there is no significant association between gender and the type of destructive eye surgery done as well as the indication for the destructive eye surgery in the present study. The reason for males losing their eyes more than females could be because males are more likely to engage in risky activities than females which could lead to severe eye trauma and subsequent loss of eye. It could also be that females have better health-seeking behavior than males thus, they present early to the hospital when they have eye problems for appropriate treatment. However, the study by Enoch et al found equal sex predilection [18].

Evisceration (90.8%) was the commonest destructive eye surgery done in the study center followed by enucleation (9.2%). This is in agreement with the study by Chinda et al [19]. In some other studies,

enucleation was more commonly done due to tumors [20, 21]. However, the study by Vemuganti et al found a lesser prevalence of enucleation [22]. The disparity in the commonest type of destructive eye surgeries done in the different study areas could be attributed to the different reasons for eye removal in those areas.

The commonest indication for destructive eye surgery was infective causes (40%) followed by traumatic causes (30.8%). Other indications were absolute glaucoma leading to spontaneous globe rupture, tumors, and staphyloma in that order. This is similar to the study by Okoye et al in the same geopolitical location, Bekibele et al¹¹ in southwestern geopolitical zone as well as studies in the Gambia, Ghana and Cameroun where infective causes were also found to be the commonest reason for eye removal [11, 13, 14, 23-25]. The high incidence of infective causes could be because patients presented late to the hospital for appropriate treatment. Some may have used traditional eye medications or self-medication with steroid eye drops which would have worsened the ocular infection. In contrast, another study in the same geopolitical zone as the present study found trauma to be the commonest indication for eye removal.⁷ Other studies in the southern, western, and northern parts of the country as well as in Ethiopia also found trauma as the commonest reason for destructive eye surgery [5, 8, 9, 16-18, 26, 27]. Some studies in the north as well as in India have found tumors as the commonest indication for destructive eye surgery [19, 21, 22]. From the above findings, there appears to be no particular pattern to indications for destructive eye surgeries with respect to the different geopolitical zones in the country. However, studies in developed countries have found painful blind eye and ocular neoplasm as the commonest indications to eye removal unlike in developing countries like ours where infective and traumatic causes are the leading indications for destructive eye surgeries [20-28].

Conclusion

Slightly more males had destructive eye surgeries than females. Evisceration was the commonest type of destructive eye surgery done. Infective causes ranked the highest indication for destructive eye surgery followed by trauma, both of which are preventable. Therefore, there is need for increased eye health education to the masses so as to prevent loss of eyes from eye infections and trauma. Future studies should focus on the knowledge of indications for destructive eye surgeries among the masses and the impact of eye health education on their

knowledge, attitude and practice as regards destructive eye surgeries.

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