

# Analysis of Profile of Destructive Eye Surgeries at a Tertiary Eye Care Centre in West Bengal

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## ABSTRACT

### BACKGROUND

Destructive Eye Surgeries (DES) are performed for some ocular conditions where there is no hope for vision and the diseased eye is a threat for the healthy eye or various systemic complications. This terminal mode of treatment has a huge impact on psychological aspect and cosmetic concerns for the patients and their relatives. This retrospective study was done to determine various indications for performing DES and their rate as well as pattern of distribution among patients attending Regional Institute of Ophthalmology (RIO) in West Bengal (WB).

### METHODS

This retrospective study included 286 cases of destructive eye surgery performed at RIO, Kolkata for a period of 2 years (1<sup>st</sup> April 2017- 31<sup>st</sup> March 2019). Data collection was done by review of operation theatre register and indoor records of patients having panophthalmitis, endophthalmitis, staphylococci, traumatic eye injury, and painful blind eyes. Information collected included age, sex, indication for surgery with the side of the eye involved, visual status of the affected eye at presentation and radiology report.

### RESULTS

Two hundred and eighty-six (286) patients had undergone destructive eye surgery during the study period. The commonest age group was above 60 yrs. (29.37%). The least common age group was 15-40 yrs., about 21.68% of the total. Evisceration was the most commonly performed DES (74.83%) followed by enucleation (24.48%). Orbital exenteration was noted in only 2 cases. Most common causes of DES were infective or inflammatory conditions. Others included ocular trauma, painful blind eye, staphylococci, and neoplasms like retinoblastoma, orbital metastasis etc.

### CONCLUSIONS

Most of the ocular conditions leading to destructive surgery were preventable. Hence proper care, public awareness, and protective measures for maintaining ocular health can reduce the burden of such destructive surgeries.

### KEYWORDS

Evisceration, Enucleation, Infection, West Bengal

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## BACKGROUND

Destructive ocular surgeries are performed for some terminal ocular conditions where there is no hope for vision and the diseased eye is a threat for the healthy eye or the general health of the patient. It consists of evisceration, enucleation and exenteration.<sup>1</sup> The decision to remove an eye is often crucial for both surgeon and patient because of the psychological sequelae.

Evisceration refers to removal of the entire content of the globe keeping the sclera, optic nerve and extra-ocular muscles intact. This is mostly done in cases of infection and trauma where the eye cannot be salvaged. Enucleation refers to the removal of whole globe along with a part of optic nerve and is generally indicated in primary malignancies of the eye or after severe ocular trauma. Exenteration involves removal of the whole globe along with the removal of soft tissues of the orbit. Major indication would be malignancies involving the orbit. It is a disfiguring procedure that has devastating functional and psychological effects on the life of an individual as well as on the society.<sup>2</sup> Present study was conducted to analyse the profile of destructive eye surgeries in tertiary eye care centre in Eastern India catering a large population and thus enabling us to take adequate preventive measures and increase awareness among people.

## METHODS

We conducted a retrospective study with 286 cases of destructive eye surgery performed at Regional institute of ophthalmology, Kolkata for a period of 2 years (1<sup>st</sup> April 2017- 31<sup>st</sup> March 2019). Data collection was done by review of operation theatre register and in-patient records having panophthalmitis, endophthalmitis, staphylococci, traumatic eye injury and painful blind eyes who were examined and admitted via emergency or outpatient basis. A thorough evaluation of the aetiologies leading to such conditions were undertaken. Information collected included history, age, sex, visual acuity at presentation, laterality of the eye, clinical diagnosis along with the radiology report. All the cases with no visual prognosis and having no perception of light were advised for destructive surgery. Final decision regarding surgery was taken only after obtaining clearance from three senior faculties of the hospital. Written consent was taken from patient or parent in case of minors and guardian in case of minor and proper counselling was done before surgery.

## RESULTS

During the study period 286 patients had undergone destructive surgeries. Among these 177 (61.89%) were male and 109 (38.11%) were female with a sex ratio of 1.62:1.0. The most common age group was above 60 years of age with majority being female. Children <15 years of age

comprised the second most common age group with male children outnumbering females. The least common age group was between 15 – 40 yrs., comprising of the total. (Table 1)

	Male	Female	N= 286
1. <15 Yrs.	44 (15.38%)	22 (7.69%)	66 (23.08%)
2. 15- 40 Yrs.	41 (14.34%)	21 (7.34%)	62 (21.68%)
3. 40- 60 Yrs.	51 (17.83%)	23 (8.04%)	74 (25.87%)
4. >60 Yrs.	41 (14.34%)	43 (15.03%)	84 (29.37%)

**Table 1. Age Group and Sex Distribution**

Evisceration was the most commonly performed destructive eye surgery followed by enucleation and exenteration (Table 2).

Type of Surgery	No. of Cases (Total 286)	%
1. Evisceration	214	74.83%
2. Enucleation	70	24.48%
3. Exenteration	2	0.7%

**Table 2. Type of Destructive Surgeries**

Infective causes like endophthalmitis and panophthalmitis were the most common indications for such destructive surgery. Trauma included 18.18% of the study population. Neoplasms like retinoblastoma and orbital metastasis were the third leading cause followed by staphylococci of different types. Painful blind eye due to absolute glaucoma included only 10 cases (Table 3). In 13 cases, diagnosis was not confirmed.

The most common age group for enucleation was <15 years with a Male-Female ratio of 1.32:1.

Aetiology	No. of Cases	% of Cases
1. Infection	134	46.85
2. Trauma	52	18.18
3. Neoplasms	46	16.08
4. Staphylococci	31	10.83
5. Painful Blind Eye	10	03.49
6. Others	13	04.54

**Table 3. Etiological Distribution**

## DISCUSSION

The most common age group undergoing destructive eye surgeries were more than 60 years. Study from Nepal by Pandey et al<sup>3</sup> also reported the most common age group as 61-70 years. This was comparable to a similar study conducted by Dilon et al<sup>4</sup> where the mean age group noted was 56.48 years. Studies conducted by Muhammad et al, Eballe et al and Nwosu et al<sup>5,6,7</sup> also showed age group more than 40 years being most commonly undergoing destructive eye surgeries. However, works by P Lavaju et al<sup>8</sup> and by Kagmeni et al<sup>9</sup> reported a mean age group of 23 years and 29 years respectively. The male: female ratio in this study is 1.62:1.0. The sex ratio of 1.5:1 with a male preponderance was observed in the study undertaken by Ogudbo et al<sup>10</sup> and Ugboko et al<sup>11</sup> in Nigeria and Farokhfard et al<sup>12</sup> in Iran. The cause for higher incidences in male population could be due to increased outdoor activity thereby increased exposure to ocular infections and trauma. Occupational hazards can be avoided by taking protective steps like use of goggles and other preventive measures.

Evisceration (74.83%) was the most common type of surgery performed followed by enucleation (24.48%). Exenteration (0.7%) being the least commonly performed destructive eye surgery in this study. Similar results were obtained by Odugbo et al with 88.2% undergoing evisceration. A number of other studies also reported evisceration as the most common destructive eye surgery performed.<sup>2,3,5,6,13,14</sup> This increased rate of evisceration may be due to higher number of infective cases, as enucleation is rarely performed for the unmanageable ocular infections. However, P Lavaju et al<sup>8</sup> reported enucleation (52.3%) as the most commonly performed destructive eye surgery. Forokhfar et al<sup>12</sup> also showed similar results where 83% of DES was enucleation.

In this study, enucleation was performed in 70 cases (24.48%) cases and the most common age group being <15 yrs. which is about 67.14% (47 cases). Commonest indication for enucleation in our study was retinoblastoma. This calls for an urgent need for proper screening measures in cases of suspicious neoplasia as early cases could be managed with chemotherapy and others. Proper health education should be given to the parents to look for any abnormal pupillary reflex in their children and if present should be consulted to ophthalmologists. Orbital exenteration was done in 2 cases of squamous cell carcinoma of conjunctiva of which one was post-radiotherapy maggot infected squamous cell carcinoma.

Infective or inflammatory causes being the most common indication for performing destructive eye surgery and contributed 46.85% of the total cases. This is similar to the results obtained by Dilon et al<sup>4</sup> where they reported the majority (53.5%) of patients being operated for infective causes. Pandey et al, Eballe et al and Monsudi et al also showed similar results.<sup>3,6,13</sup> Several studies in Nigeria reported intractable infection as the most common cause.<sup>7,13,15,16,17,18</sup> Okoye et al in south eastern Nigeria also reported definite higher proportion of infective cases.<sup>16</sup> However ocular infection did not feature as the main cause of destructive eye surgery in Turkey and China.<sup>19,20</sup> It seems that common infective causes like panophthalmitis and endophthalmitis are major threats in various developing countries. In this study, infective keratitis leading to involvement of intra-ocular structures was the commonest cause. Others were endogenous endophthalmitis, post-operative (intraocular surgeries) endophthalmitis / panophthalmitis. Measures to prevent destructive surgery in these cases were early diagnosis and prompt treatment. Preventive measures include screening of diabetes mellitus and other systemic diseases along with exclusion of any focus of infection in the body. Patient education is a must for proper instillation of medications and maintenance of good hygiene following intraocular surgeries. Special attention should be given to the immunosuppressed patients as they are more prone to infections. Early detection and treatment of glaucoma can prevent absolute glaucoma thereby reducing rate of destructive eye surgery.

Traumatic causes included 18.18% of the total study population. However, a higher percentage was noted in two

different studies conducted by Ogubdo et al<sup>10</sup> where the major indication for such destructive surgery was found to be trauma (45.9%) and that by Farokhfar et al<sup>12</sup> who reported trauma being the most common indication for surgery (33.3% of cases). Mpyet et al<sup>21</sup> showed that traumatic eye injury was the most frequent indication for DES in urban setup in Nigeria. Similarly, in the US, Yousuf et al<sup>22</sup> reported ocular trauma as the most frequent indication for DES. Majority of them were due to road traffic accident, blast injury, accidents at work places or fire cracker injury. Destructive surgeries were performed in traumatic ocular injuries that presented with expulsion of intraocular structures, severe retrobulbar haemorrhage, uveal tissue prolapse with uncontrollable haemorrhage and retained intraocular foreign body threatening vision of the healthy eye. Prompt surgical management and long term steroid treatment may be the reasons for reduced number of trauma related DES in our study.

Malignancy involving orbit contributed 46 cases of which 31 cases were stage 4 and 10 cases were stage 5 retinoblastoma, 3 cases of uveal melanoma and 2 cases of squamous cell carcinoma of conjunctiva. Other causes noted in this study included phthisis bulbi, severe chronic uveitis, scleral necrosis (where scleral patch graft failed) and post retinal detachment surgery complications. Painful blind eye due to glaucoma was the least common indication (3.5% of the total). In 13 cases (4.55%) of DES, no specific diagnosis could be made regarding aetiology. Incidentally, left eye was the most commonly operated eye for such terminal indications (158 patients, 55.24%) compared to right eye (128 patients, 44.76%).

## CONCLUSIONS

Majority of patients who needed DES were above 60 years of age. Infective causes (endophthalmitis /panophthalmitis) were the most common indications. So, strengthening of eye health care in elderly is an important issue to be addressed. The causative factors in this study indicate that majority were preventable. Hence protective measures and prompt action play a major role in reducing the burden of destructive eye surgeries due to such causes. Quality control of various intraocular surgeries is indicated. Public awareness should be created for avoiding road traffic accidents to reduce traumatic destruction of eyes. Exclusive health education should be done to create awareness among the public. Also it is imperative to provide orbital implant and prosthesis to such patients for psychological factors and advise them to take good care of the fellow eye.

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