Original Article

Indications for Surgical Removal of the Eye in Children: A Five-Year Review

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Abstract

Aim: To determine the indications and surgical procedures used for removing an eye in children.

Methods: Theatre and clinical records of children aged eighteen years and below were examined to determine the various indications and the surgical procedures undertaken for removing the eye.

Results: Sixty-seven children had an eye removed with more male children undergoing surgery (M: F=1.5:1). The right eye was more frequently involved while a ruptured globe sequel to trauma was the most common indication for removing an eye in 34.3% of cases. Evisceration was the most common procedure performed in 62.7% of cases.

Conclusions: Two-thirds of the reasons for removing an eye in children in this environment are avoidable. Primary eye care, education on care of the eye and provision of adequate surgical facilities to manage ocular trauma are urgently required.

Keywords: Eye, Enucleation, Exenteration, Evisceration, children

Introduction

The surgical removal of the eyeball leaves the ophthalmologist with a feeling of frustration and defeat as sight restoration in that eye is not possible anymore. In most circumstances, only one eye is removed and a study of the reasons for removing the eye is thought to give an insight into the causes of uniocular blindness[1]. In children, the long period of uniocular blindness is a cause for worry because there is a higher chance of loosing sight completely should there be a loss of the other eye in the course of life. There is also the stigma of having only one eye could make social integration with peers difficult.

The surgical removal of the eye can be through evisceration, enucleation or exenteration, depending on the pathology and extent of spread of infection or tumours and the surgeons' judgement. The indications for removing an eye include; primary intraocular malignancy, a severely traumatized eye to prevent sympathetic ophthalmitis, a painful blind eye without potential for useful vision, suppurative endophthalmitis not responding to medical or surgical treatment and a blind disfigured eye that is cosmetically not acceptable. Various studies have looked at the indications for removing the eye and reported a large proportion of the reasons for removing an eye as preventable[1,3,4].

We review in this communication the indications and the various procedures for removing the eye in children aged eighteen years and below over a five-year period at the Jos University Teaching Hospital with a view to obtaining useful information to plan for public health education.

Materials and methods

Eye theatre records over a period of five years; January 1999 to December 2003 were reviewed. Data on children aged 18 years and below who underwent any of the destructive ocular procedures of enucleation, evisceration or exenteration were obtained. Age, sex, diagnoses, type of surgical procedure and the eye operated were entered into a database in Microsoft excel. Clinical records of all patients were obtained and the histological

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diagnoses confirmed from the histology report. Data was analysed using Epi-Info version 3.2.2 (World Health Organisation, Geneva, Switzerland).

Results

Four hundred and thirty two surgeries were performed on children. Sixty-seven (15.5%) of these were destructive in nature. The mean age of the study population was 7.7years (S.D 4.7), while 10years was the most common age of study subjects. The mean age for female subjects (7.2; S.D 4.3) was less than that for males (8.13; S.D 4.9). More males (40; 59.7%) had surgery than females (27; 40.3%).

The most common indication for surgery was trauma (ruptured globe) in 23 children followed by intraocular tumour and intractable infection. A painful blind eye was the least common indication for removing an eye. The most common surgical procedure in both sexes was an evisceration in 42 (62.7%) persons; 10 (14.9%) persons had exenteration for an orbital or intraocular tumour. Table 1 gives the indications for surgery and the types of surgery performed.

Ocular pathology was diagnosed more frequently in the right eye (41, 61.2%) than the left eye in all cases except for painful blind eye, which was equal in both eyes. Sixteen males against seven females had ruptured globes, while more females presented with an unsightly blind eye. Only female patients presented with a painful blind eye. The only intraocular tumour diagnosed was retinoblastoma. Table 2 shows the sex distribution of the various indications and the eye involved.

All tumours occurred in children less than ten years of age while ocular injuries were more frequent in older children. Intractable infection occurred in all age groups. The distribution of the indications for surgery in the various age groups is shown in Fig.1.

Fig 1: Age-group distribution of indications for surgery

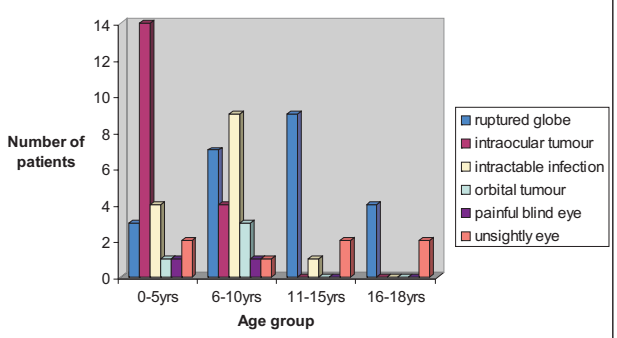


Table 1:
Indications for surgery and types of surgery performed

Indications	Surgical Procedure			Total (%)
	Enucleation	Evisceration	Exenteration	
Ruptured globe	0	23	0	23(34.3)
Intraocular tumour	12	0	6	18(26.0)
Intractable infection	2	11	0	13(19.4)
Unsightly blind eye (cosmetic)	1	6	0	7(10.4)
Orbital tumour	0	0	4	4(6.0)
Painful blind eye	0	2	0	2(3.0)
Total	**15**(22.4%)	**42**(62.7%)	**42**(62.7%)	**67**(100)

Table 2:
Sex distribution of indications for removing the eye

Indications	Females		Males		Total
	Left	Right	Left	Right	
Ruptured globe	2	5	5	11	23
Intraocular tumour	3	5	5	4	17
Intractable infection	0	3	7	4	14
Orbital tumour	0	1	2	1	4
Painful blind eye	1	1	0	0	2
Unsightly (blind) eye (cosmetic)	1	5	1	0	7
Total	**7**	**20**	**20**	**20**	**67**

Discussion

The main finding of this study was the fact that 64.1% of the reasons for removing an eye in children in this environment were: trauma, intractable

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infection and unsightly eyes, which are preventable. Ocular trauma was the most common preventable reason for loss of an eye. This was followed by intractable infection and the presence of staphyloma from previous measles infection or use of traditional medications. Our pattern is similar to report by others[3,5]. Unsupervised play in children, late presentation to eye care facilities and lack of facilities for vitreo-retinal surgery are some of the reasons for the high number of eyes lost to trauma[8]. Closely associated with late presentation is lack of early and appropriate antibiotic therapy resulting in a large proportion of eyes lost to intractable infection. A number of the eyes lost to infection had penetrating ocular injury as the initial aetiological agent. The proportion of eyes with staphyloma is lower in this study compared to earlier reports by other authors[1,9]. This may be because fewer children suffer from measles-related corneal damage due to the greater coverage of the National Programme on Immunisation in the recent past[6]. In order to reduce the large number of eyes lost to trauma and infection, there is need for better education on play, methods of corporal punishment for children and other preventive measures against trauma[7].

There is need for development of primary eye care to enable injured persons access medical care early while also equipping tertiary centres to be able to handle more severe injuries as has been advocated by other authors[8]. The only intraocular tumour encountered in this study was retinoblastoma. This is not surprising in this age group and study population as retinoblastoma is the most common childhood ocular tumour encountered in our environment[1,13]. All cases of retinoblastoma occurred in children less than ten years, which agrees with the pattern seen in most reports from this environment[9,10]. Chemotherapy and radiotherapy for intraocular and orbital tumours, surgical decompression of the orbit for orbital tumours performed early in the course of the disease could have reduced the proportion of eyes lost to tumours, but most patients came late having tried some form of traditional treatment. This is a common practice in our environment[3,11]. There is thus a need for emphasis on primary eye care as already alluded to and public health education on presentation of common tumours because this will enable persons with such conditions seek treatment for tumours where these are available.

More males than females lost their eyes in this study. We may attribute this to the fact that more males are prone to injury as they are more active[12], which in a number of cases resulted in intractable infection. The presence of intraocular and orbital tumour in both sexes was similar[13]. In this study, more female patients lost an eye because of cosmetic deformity from staphyloma mainly due to a previous history of measles.

The most common surgery performed for all conditions except tumours, was evisceration. This relates with the most common diagnoses, as evisceration is more convenient and easier to perform in cases of trauma and infection[6]. Evisceration does not expose the meninges through the cut end of the optic nerve to infection and provides a scleral bed for good movement of prosthesis in the future. Enucleation was the next most common surgery though the proportion of eyes enucleated was not too different from those exenterated (both surgical procedures were mainly performed for intraocular or orbital tumours). Delay in presentation, lack of other treatment modalities like photocoagulation and radiotherapy for tumours and reluctance to have an eye removed would explain the high number of eyes that underwent Exenteration. Parents only consented to this surgery when the tumour had become a large fungating mass. In this centre, we do not have facilities for radiotherapy. The availability of this means of treatment may well have reduced the number of eyes enucleated or exenterated.

We conclude that most of the reasons for removing an eye in children in our environment are avoidable. We therefore advocate greater attention to primary eye care to enhance access to eye care services. Public health education and improvement in the available facilities for managing ocular

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problems in children in our tertiary hospitals may salvage most of the eyes that are presently lost in childhood.

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